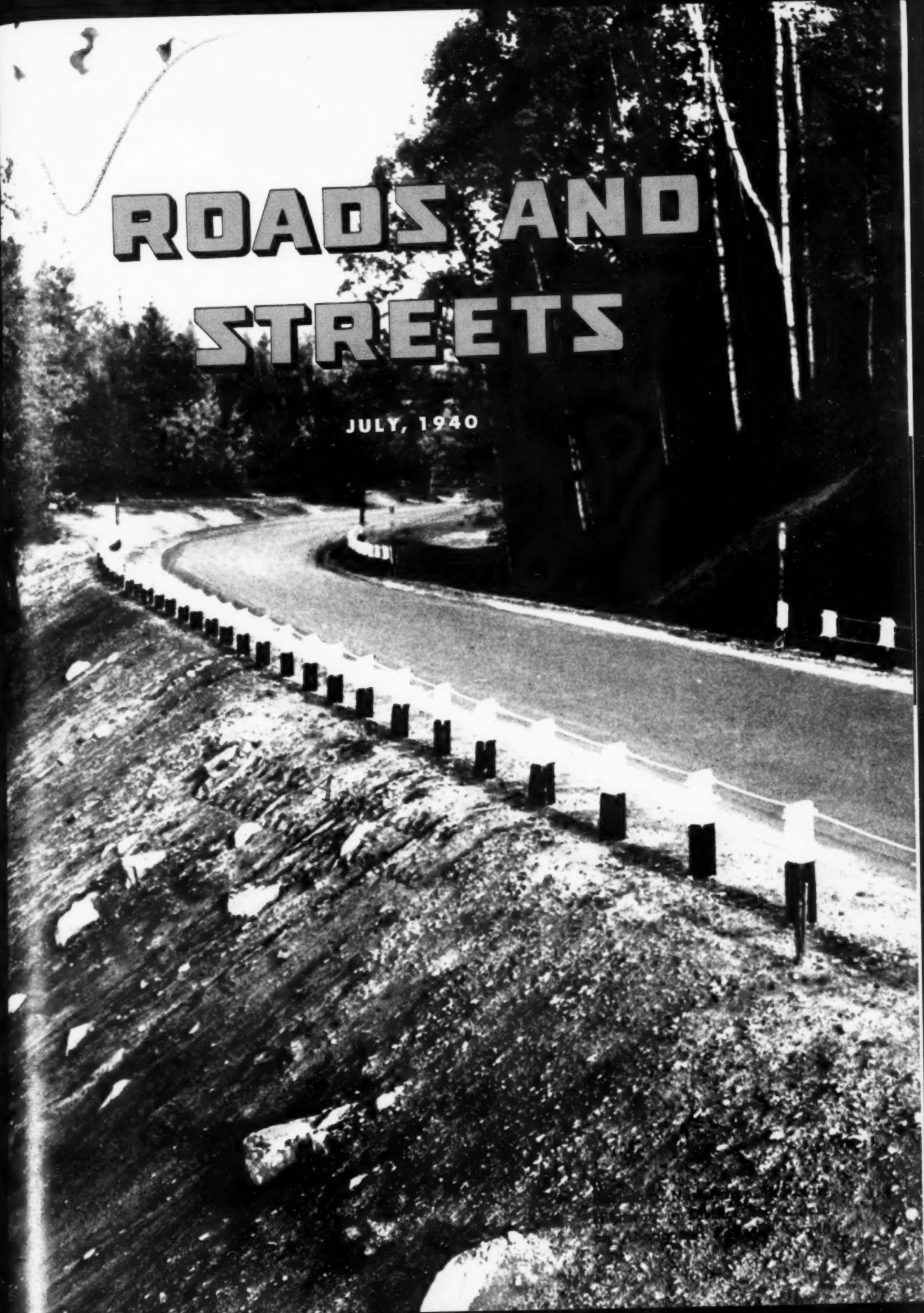
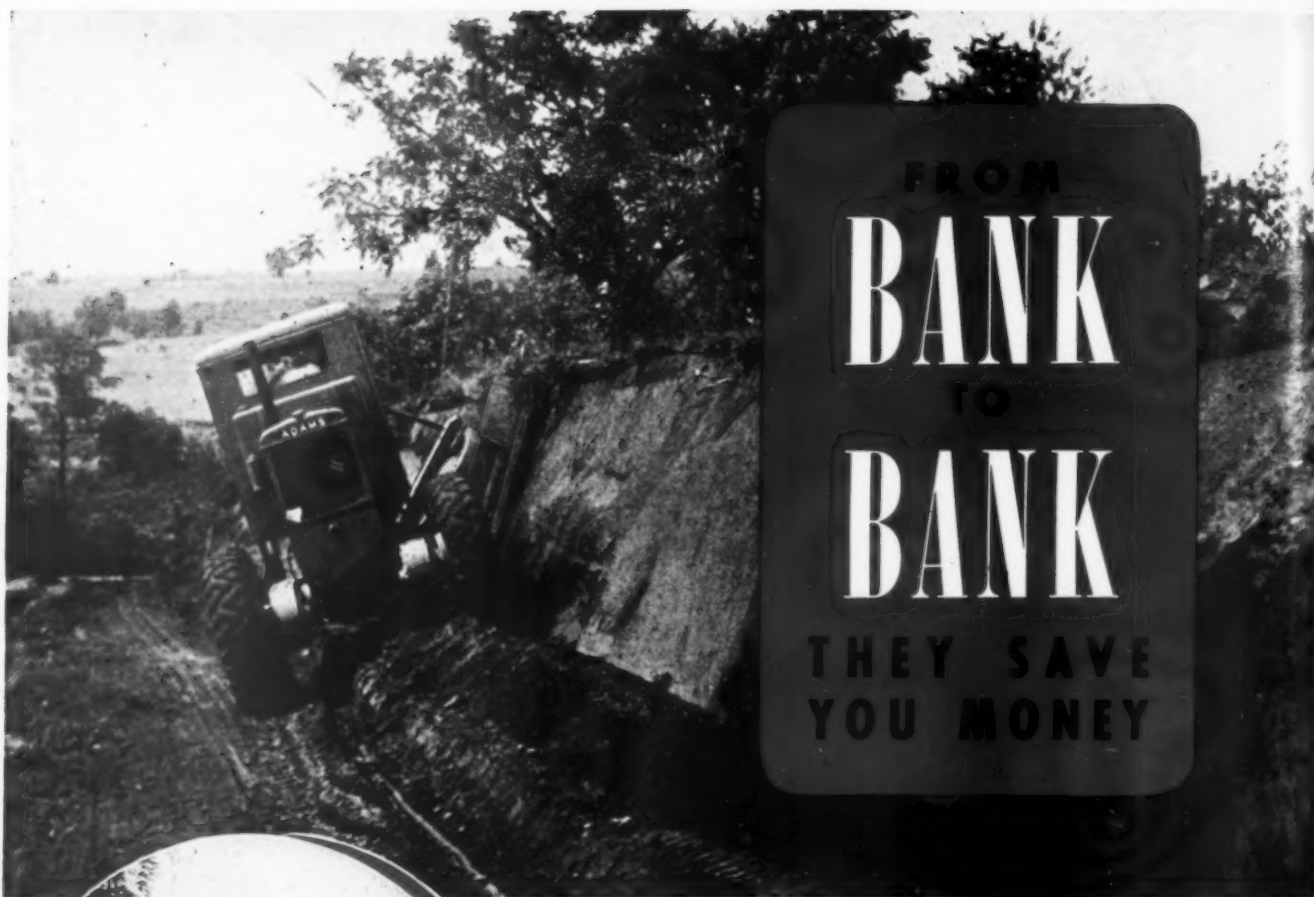


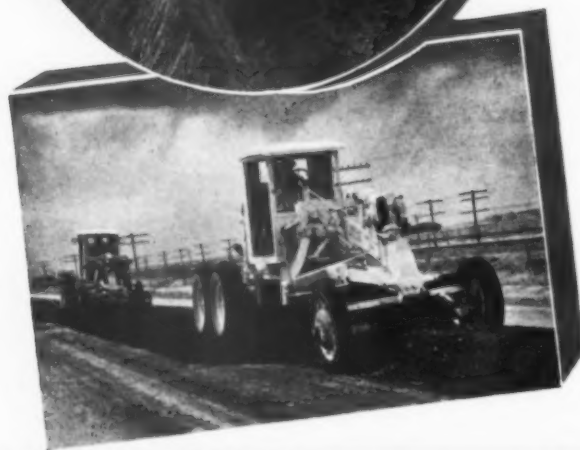
# ROADS AND STREETS

JULY, 1940





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THE DARKER the night and the wetter the pavement, the greater is the driving visibility on roads guarded by White Reflecting Curb made with Atlas White cement. Under rain, the visibility of smooth concrete curb and pavement drops to practically zero. But on main New Jersey highways today, a new type curb with white concrete face and reflecting saw-tooth design shows up even brighter on rainy nights than in clear weather—under no other illumination than ordinary car headlights.

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All photos by New Jersey State Highway Department

FIG. 1 Smooth White Curb—Dry and Wet



Fig. 1. Here is a strip of ordinary smooth white concrete curb under car headlights at night. It's only slightly more visible than the road. And when water (shown by arrow) covers the curb and road, there's a complete blackout. The curb disappears.

Here's the reason: Smooth curb and road reflect most headlight rays forward, away from the driver; visibility is poor. On a rainy night, water fills the slight irregularities of smooth curb and pavement, causes them to act even more like a mirror, and to reflect even more headlight rays forward, away from the driver; visibility is nil (shown by arrow). Road and curb are almost completely obscured.

FIG. 2 White Reflecting Curb on rainy night

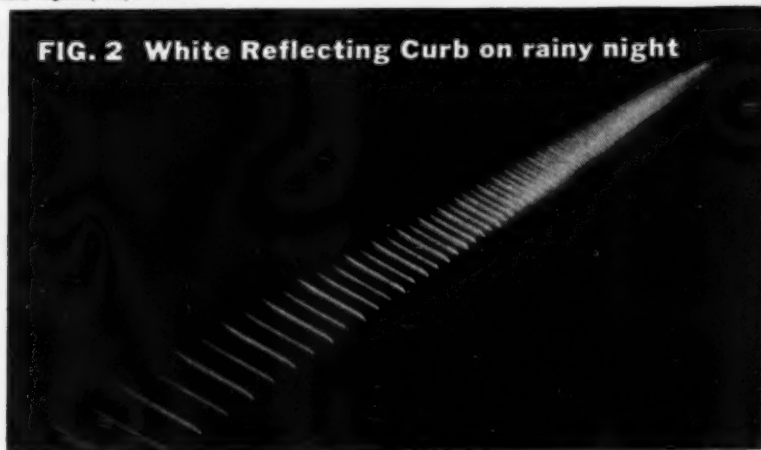


Fig. 2. White Reflecting Curb makes a gleaming ribbon of light extending far in front of the car. Even under unfavorable conditions—on a rainy night, as here—the curb itself seems to be lighted. But actually this is simply due to the light reflected from the driver's headlights—no other illumination.

The reason is simple: Smooth curb wastes the headlight rays, reflects them forward, away from the driver; visibility is poor. But the specially designed saw-toothed faces of White Reflecting Curb conserve the headlight rays, catch and reflect them back to the driver; visibility is high. And on wet nights the film of water on the reflecting faces intensifies the reflection—illumination is even brighter—visibility is even higher—night driving is safer.

FIG. 3

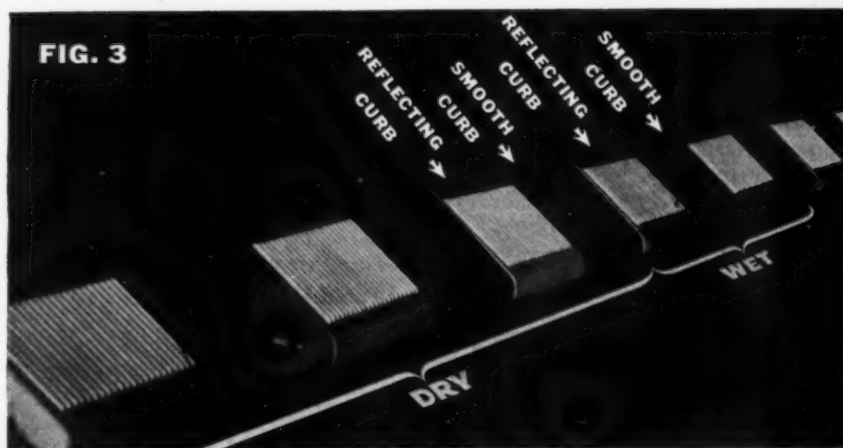


Fig. 3. A New Jersey State Highway Test: Alternate sections of smooth white curb and reflecting white curb under dry and wet conditions as seen by night drivers, under car headlights only, with no other illumination. All sections, the smooth ones which appear dark, as

well as the reflecting sections which appear white, are made of identical white materials.

White Reflecting Curb made with Atlas White cement provides a curb that defines the road by day, is highly visible on dry nights, and even more visible on wet nights.

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JULY, 1940

No. 7

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# ROADS and STREETS

Vol. 83, No. 7

July, 1940

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ESTABLISHED 1906

## STATISTICS PROVIDE FUNDAMENTAL INFORMATION

FOR many years the editors of *ROADS AND STREETS* have realized the need for reliable statistical data relative to highway matters. During the "Roaring Twenties" public demand for more improved roads over which to drive their rapidly improving motor vehicles supplied the impetus that pushed the highway program. Motor vehicle registrations increased at a much greater rate than highway mileage. Congestion ensued, accident and death rates mounted. Street and highway improvement lagged behind demand.

When the "Depressed Thirties" came along, funds were not so easily obtained. Information for supporting arguments for increased highway programs became necessary. Statistical information on finances, mileages, traffic, safety, motor vehicle relationships to the social order, diversion of highway funds, and needed new construction became more in demand. Railroad freight and passenger traffic fell off and the railroads began to complain that the highways were causing their ton-mile and passenger-mile revenue losses. The complaint was heard that highway traffic was subsidized to the detriment of other modes of transportation. Statistical studies became necessary to learn the basic facts.

Through all of this clamor and usurpation of highway funds, the highway program kept on an even keel. Motor vehicle registrations dropped in the first part of the "Depressed Thirties" but later increased beyond that at the end of the "Roaring Twenties." Highway construction was in demand and still is. However, now we must begin to form a solid foundation upon which to build our case. Statistics are the tools to be employed in this effort—statistics showing basic facts which are moulded into an intelligent and sound theory of highway financing.

Through these columns we have presented various theories of allocation of funds, of annual road costs, and of principles of highway finance. In an editorial in this issue we present a plan of fund allocation based on statistical analyses of traffic volume groups and their use of highways. It is a purely economic approach. We believe that other values, than purely economic ones, deserve consideration when considering fund allocation for individual highways, a highway system, or highways as a whole. We refer to those intangible items—benefits.

In grouping the data, we tried to adhere to the following:

- 1.—Financial
- 2.—Mileage

- 3.—Traffic
- 4.—Motor Vehicle
- 5.—Costs
- 6.—General

It was not possible to abide by a strict grouping because of mechanical difficulties and the fact that some data could be placed under either of two or three classifications. An index is provided to make the data more usable.

For this issue a highway engineer-economist was employed as special consulting editor. For the past year he has been developing and collecting the data included herein. Because of his regular employment connection we were not permitted to use his name.

**EXPLANATORY NOTE.**—In some of the tables, and charts which were drawn from the tabular data, footnotes explain the included information. On some, reference was made to the following explanation about Local Road and Fiscal Data:

Local highway receipts and expenditures and road mileage data, compiled by the Public Roads Administration prior to 1932, were from reports of state and local (county, township, and town) authorities beginning in 1921. In 1921, 1926 and 1931 complete reports were obtained from all local rural administrative units of government. In the intermediate years, the compilations were based on the expansion of data reported by at least 30 percent of the local units. These data were published from 1921 through 1931. However, in 1931, the published data were so inconsistent with previously reported data that it was deemed advisable to suspend publication of data for ensuing years until a more complete, accurate, and reliable means of reporting might be developed. The Statewide Highway Planning Surveys inaugurated in 1935 and continuing to date have provided this means of reporting. The local road mileage data from 1932 through 1934 have been reconciled to the local road inventories of the Highway Planning Surveys in all states. The reconciliation of local road finance to the fiscal data of the Highway Planning Surveys is in progress but incomplete. (Last published data in 1931.) It is expected that the complete reconciliation of local highway mileage and fiscal data will eventually permit these data to be brought up to date. Thereafter, it is expected that the continuing Statewide Highway Planning Surveys will enable the resumption of annual publication of local road data.

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# LOCAL ROAD RECEIPTS Source: Public Roads Administration Data

| Total Funds Available | Balance Previous Year | Total Income During Year | CURRENT REVENUE FROM LOCAL SOURCES |                               |                                   |                               |      |                       | Transfers From State | Proceeds From Sale Of Bonds And Notes |
|-----------------------|-----------------------|--------------------------|------------------------------------|-------------------------------|-----------------------------------|-------------------------------|------|-----------------------|----------------------|---------------------------------------|
|                       |                       |                          | Total Revenue                      | Tax - Levy And Appropriations | Motor Vehicle Fees To Local Roads | Gasoline Taxes To Local Roads | Year | Miscellaneous Revenue |                      |                                       |
|                       |                       |                          |                                    |                               |                                   |                               | 1904 |                       |                      | \$ 3,530,000                          |
|                       |                       |                          |                                    |                               |                                   |                               | 1909 |                       |                      |                                       |
|                       |                       |                          |                                    |                               |                                   |                               | 1914 |                       |                      |                                       |
|                       |                       |                          |                                    |                               |                                   |                               | 1915 |                       |                      | 40,000,000                            |
|                       |                       |                          |                                    |                               |                                   |                               | 1916 |                       |                      |                                       |
|                       |                       |                          |                                    |                               |                                   |                               | 1917 |                       |                      |                                       |
|                       |                       |                          |                                    |                               |                                   |                               | 1918 |                       |                      |                                       |
|                       |                       |                          |                                    |                               |                                   |                               | 1919 |                       |                      |                                       |
| \$ 745,510,432        | \$ 21,820,797         | \$ 623,939,635           | \$ 419,450,491                     | \$ 345,466,813                | \$ 18,709,871                     | \$ 324,472                    | 1920 | \$ 54,949,335         | \$ 2,883,844         | 201,655,300                           |
| 593,056,592           | 21,907,045            | 571,149,547              | 442,367,174                        | 354,227,471                   | 35,717,943                        | 4,137,401                     | 1921 | 48,264,360            |                      | 128,782,373                           |
| 646,264,262           | 43,917,320            | 602,566,942              | 444,229,990                        | 378,787,681                   | 26,856,176                        | 16,971,402                    | 1922 | 24,214,559            |                      | 157,536,944                           |
| 780,912,722           | 97,895,087            | 685,017,642              | 506,170,685                        | 412,625,227                   | 46,545,445                        | 24,833,979                    | 1923 | 23,966,034            | 30,433,641           | 144,415,116                           |
| 933,701,905           | 158,278,223           | 775,423,632              | 576,863,590                        | 445,046,762                   | 37,861,018                        | 30,733,227                    | 1924 | 56,242,683            | 29,964,569           | 168,575,423                           |
| 1,018,721,541         | 178,107,618           | 840,613,923              | 621,846,619                        | 477,912,511                   | 40,239,856                        | 46,960,508                    | 1925 | 56,535,744            | 37,984,351           | 181,080,953                           |
| 1,088,224,095         | 172,897,145           | 835,586,951              | 654,107,119                        | 499,761,559                   | 50,435,065                        | 53,778,652                    | 1926 | 51,135,653            | 30,997,476           | 180,222,357                           |
| 953,529,592           | 163,401,807           | 790,128,365              | 647,776,661                        | 469,171,093                   | 51,886,324                        | 70,492,678                    | 1927 | 36,226,566            | 31,714,578           | 110,635,146                           |
| 973,792,909           | 155,415,401           | 818,379,508              | 609,993,232                        | 494,633,325                   | 54,911,122                        | 107,110,709                   | 1928 | 33,358,075            | 33,701,795           | 94,684,461                            |
| 1,004,684,272         | 192,367,667           | 812,616,605              | 667,298,006                        | 462,228,071                   | 65,224,552                        | 96,611,470                    | 1929 | 43,169,613            | 33,223,388           | 111,696,261                           |

Note: See Explanatory Matter on First Page. In 1931 U. S. Bureau of Public Roads Discontinued Compilation of Local Road Data For Publication.

## STATE HIGHWAY RECEIPTS Source: Public Roads Administration

### CURRENT REVENUE FROM STATE SOURCES

| Total Funds Available | Balance From Previous Year | Total Income During Year | Total Revenue  | Tax - Levy And Appropriations | Motor Vehicle Fees To State Highways | Gasoline Taxes To State Highways | Year | Miscellaneous Revenue | Transfers From Local | Proceeds From Sale Of Bonds And Notes | Federal Aid Receipts |
|-----------------------|----------------------------|--------------------------|----------------|-------------------------------|--------------------------------------|----------------------------------|------|-----------------------|----------------------|---------------------------------------|----------------------|
|                       |                            |                          |                |                               |                                      |                                  | 1917 |                       |                      |                                       | \$ 89,019            |
|                       |                            |                          |                |                               |                                      |                                  | 1918 |                       |                      |                                       | 1,606,491            |
|                       |                            |                          |                |                               |                                      |                                  | 1919 |                       |                      |                                       | 10,057,903           |
|                       |                            |                          |                |                               |                                      |                                  | 1920 |                       |                      |                                       | 36,297,371           |
| \$ 590,610,064        | \$ 85,696,658              | \$ 404,068,155           | \$ 179,670,656 | \$ 67,232,798                 | \$ 101,284,479                       | \$ 3,273,988                     | 1921 | \$ 6,079,391          | \$ 35,344,175        | \$ 111,396,637                        | 77,456,687           |
| 606,375,203           | 139,034,354                | 504,713,429              | 197,209,303    | 85,861,103                    | 107,715,649                          | 5,598,677                        | 1922 | 6,335,674             | 94,756,493           | 143,004,141                           | 79,741,482           |
| 712,223,747           | 156,626,702                | 467,540,949              | 240,257,399    | 61,610,067                    | 147,075,956                          | 15,876,084                       | 1923 | 15,490,432            | 66,753,825           | 60,186,794                            | 92,345,401           |
| 780,081,298           | 115,656,721                | 664,424,571              | 359,105,115    | 54,879,646                    | 199,645,163                          | 89,326,340                       | 1924 | 15,549,610            | 87,998,496           | 101,653,327                           | 91,400,832           |
| 806,687,608           | 135,479,178                | 673,206,430              | 420,225,366    | 48,147,042                    | 224,551,631                          | 124,303,154                      | 1925 | 15,051,966            | 71,737,028           | 141,402,082                           | 92,180,406           |
| 916,554,922           | 168,714,171                | 733,840,751              | 478,210,960    | 49,554,206                    | 239,955,128                          | 176,769,657                      | 1926 | 12,521,969            | 83,890,890           | 90,979,230                            | 80,159,671           |
| 1,025,406,474         | 166,159,878                | 849,366,599              | 560,334,730    | 54,424,166                    | 259,134,850                          | 234,163,828                      | 1927 | 12,611,916            | 86,709,904           | 121,452,599                           | 60,798,365           |
| 1,194,775,028         | 232,967,988                | 961,807,036              | 646,614,636    | 71,736,980                    | 272,092,734                          | 287,256,416                      | 1928 | 11,726,508            | 74,190,412           | 161,229,297                           | 77,572,691           |
| 1,423,163,912         | 286,490,475                | 1,136,673,437            | 761,312,996    | 43,317,921                    | 289,801,739                          | 411,109,446                      | 1929 | 17,063,821            | 60,609,297           | 222,286,309                           | 92,462,836           |
| 1,367,970,463         | 273,333,828                | 1,092,636,635            | 696,166,537    | 35,437,683                    | 253,402,734                          | 366,168,600                      | 1930 | 21,143,320            | 47,762,602           | 130,613,678                           | 218,073,818          |
| 1,173,576,473         | 275,256,679                | 898,317,794              | 632,199,797    | 31,586,039                    | 211,321,255                          | 363,366,041                      | 1931 | 25,922,432            | 24,610,963           | 104,649,840                           | 136,657,174          |
| 955,123,660           | 190,859,528                | 764,564,132              | 540,780,399    | 27,713,323                    | 176,617,169                          | 321,413,833                      | 1932 | 14,636,074            | 9,894,799            | 27,975,062                            | 165,643,982          |
| 1,295,642,000         | 289,682,000                | 1,005,960,000            | 600,865,000    | 11,165,000                    | 195,071,000                          | 376,630,000                      | 1933 | 17,399,000            | 9,914,000            | 40,969,000                            | 354,612,000          |
| 1,205,945,000         | 303,935,000                | 902,010,000              | 604,360,000    | 7,643,000                     | 166,433,000                          | 392,658,000                      | 1934 | 17,446,000            | 20,366,000           | 55,863,000                            | 219,361,000          |
| 1,502,728,000         | 360,178,000                | 1,142,590,000            | 678,627,000    | 5,133,000                     | 219,066,000                          | 434,676,000                      | 1935 | 19,530,000            | 14,447,000           | 106,235,000                           | 346,281,000          |
| 1,579,810,000         | 364,185,000                | 1,195,625,000            | 643,702,000    | 2,985,000                     | 276,840,000                          | 542,813,000                      | 1936 | 23,064,000            | 22,152,000           | 85,009,000                            | 282,762,000          |
| 1,513,344,000         | 416,636,000                | 1,096,908,000            | 626,066,000    | 5,982,000                     | 226,617,000                          | 546,636,000                      | 1937 | 21,449,000            | 15,711,000           | 57,505,000                            | 196,826,000          |

## TOTAL HIGHWAY RECEIPTS Source: Public Roads Administration Data

| Total Income During Year | CURRENT REVENUE FROM ALL SOURCES |                               |                    |                |      |                       | Proceeds From Sale Of Bonds And Notes | Federal Aid Receipts |
|--------------------------|----------------------------------|-------------------------------|--------------------|----------------|------|-----------------------|---------------------------------------|----------------------|
|                          | Total Revenue                    | Tax - Levy And Appropriations | Motor Vehicle Fees | Gasoline Taxes | Year | Miscellaneous Revenue |                                       |                      |
| \$ 79,623,616            |                                  |                               | \$ 942,675         |                | 1904 |                       |                                       |                      |
| 240,263,784              |                                  |                               | 12,362,031         |                | 1909 |                       |                                       |                      |
|                          |                                  |                               |                    |                | 1914 |                       |                                       |                      |
|                          |                                  |                               | 16,245,711         |                | 1915 |                       |                                       |                      |
|                          |                                  |                               | 25,865,369         |                | 1916 |                       |                                       |                      |
|                          |                                  |                               | 37,501,233         |                | 1917 |                       |                                       | 69,019               |
|                          |                                  |                               | 51,447,419         |                | 1918 |                       |                                       | 1,606,491            |
|                          |                                  |                               | 64,697,256         | 1,022,514      | 1919 |                       |                                       | 10,057,903           |
|                          |                                  |                               | 102,546,212        | 1,363,902      | 1920 |                       |                                       | 36,297,371           |
| 989,629,771              | 599,321,147                      | 412,699,611                   | 119,994,350        | 3,598,460      | 1921 | 63,028,726            | 313,051,937                           | 77,456,687           |
| 971,937,131              | 682,624,573                      | 416,037,526                   | 152,047,624        | 7,960,998      | 1922 |                       | 216,969,157                           | 79,741,482           |
| 1,069,765,501            | 719,174,398                      | 416,155,063                   | 162,793,908        | 20,010,255     | 1923 | 63,788,552            | 259,190,871                           | 92,345,401           |
|                          |                                  |                               | 201,679,149        | 64,762,017     | 1924 | 37,564,189            |                                       | 91,400,832           |
| 1,245,271,544            | 867,275,800                      | 467,704,673                   | 246,390,608        | 114,162,319    | 1925 | 39,018,000            | 285,815,158                           | 92,180,406           |
| 1,348,693,973            | 997,109,045                      | 491,193,604                   | 262,412,649        | 174,036,361    | 1926 | 69,466,214            | 272,421,724                           | 79,163,201           |
| 1,452,579,433            | 1,100,359,579                    | 527,476,717                   | 290,194,984        | 223,630,165    | 1927 | 69,057,713            | 272,080,163                           | 80,159,671           |
| 1,566,946,170            | 1,214,441,849                    | 553,165,727                   | 309,567,675        | 297,942,678    | 1928 | 63,745,569            | 271,705,966                           | 60,798,365           |
| 1,646,030,433            | 1,296,593,299                    | 560,908,073                   | 329,979,058        | 357,751,294    | 1929 | 47,954,674            | 271,584,443                           | 77,572,691           |
| 1,960,741,853            | 1,451,306,226                    | 537,951,316                   | 344,712,980        | 618,220,155    | 1930 | 50,421,897            | 316,972,769                           | 92,462,836           |
| 1,824,047,300            | 1,565,464,543                    | 497,729,754                   | 316,627,286        | 482,794,070    | 1931 | 64,313,433            | 242,508,939                           | 218,073,818          |
|                          |                                  |                               |                    |                | 1932 |                       |                                       | 136,657,174          |
|                          |                                  |                               |                    |                | 1933 |                       |                                       | 165,643,982          |
|                          |                                  |                               |                    |                | 1934 |                       |                                       | 354,612,000          |
|                          |                                  |                               |                    |                | 1935 |                       |                                       | 219,361,000          |
|                          |                                  |                               |                    |                | 1936 |                       |                                       | 346,281,000          |
|                          |                                  |                               |                    |                | 1937 |                       |                                       | 282,762,000          |
|                          |                                  |                               |                    |                | 1938 |                       |                                       | 196,826,000          |

Note: See Explanatory Matter on First Page. In 1931 U. S. Bureau of Public Roads Discontinued Compilation of Local Road Data For Publication.



## LOCAL HIGHWAY EXPENDITURES

Source: Public Roads Administration Data

| Total Disbursements | Total Expenditures | Construction And Right-Of-Way | Maintenance   | Miscellaneous Expense Administrative | Interest On Bonds And Notes Outstanding | Year | Principal Payments On Bonds And Notes | Transfers To State | Unexpended Balance |
|---------------------|--------------------|-------------------------------|---------------|--------------------------------------|---|------|---------------------------------------|--------------------|--------------------|
| \$656,366,111       | \$566,618,697      | \$337,375,588                 | \$186,136,226 | \$17,379,132                         | \$33,928,056                            | 1921 | \$39,747,414                          | \$                 | \$109,144,321      |
| 630,000,000         | 590,000,000        | 330,000,000                   | 185,000,000   | 40,000,000                           | 35,000,000                              | 1922 | 40,000,000                            |                    | 30,000,000         |
| 577,831,087         | 521,685,799        | 242,285,205                   | 194,226,600   | 45,442,674                           | 49,731,320                              | 1923 | 56,145,288                            |                    | 15,225,505         |
| 600,437,486         | 533,618,572        | 255,836,063                   | 195,014,124   | 28,259,327                           | 54,509,058                              | 1924 | 66,818,916                            |                    | 45,846,774         |
| 639,814,606         | 543,467,141        | 264,965,764                   | 196,573,516   | 30,083,134                           | 51,844,737                              | 1925 | 74,032,348                            | 22,315,117         | 141,098,123        |
| 751,370,652         | 567,731,124        | 265,718,219                   | 213,236,069   | 42,091,687                           | 66,685,149                              | 1926 | 91,070,298                            | 72,769,230         | 182,131,253        |
| 829,177,445         | 643,449,467        | 289,180,355                   | 237,970,467   | 41,282,865                           | 75,015,780                              | 1927 | 104,796,268                           | 80,931,710         | 189,544,056        |
| 832,142,007         | 659,222,144        | 282,314,715                   | 259,753,188   | 37,347,326                           | 79,806,915                              | 1928 | 103,281,707                           | 69,638,156         | 176,082,089        |
| 807,714,604         | 644,792,641        | 256,581,811                   | 260,477,901   | 49,455,959                           | 78,277,070                              | 1929 | 106,032,780                           | 56,869,183         | 145,814,986        |
| 851,686,625         | 700,495,248        | 296,594,546                   | 284,228,960   | 37,066,817                           | 82,604,625                              | 1930 | 112,576,447                           | 38,614,930         | 122,106,264        |
| 847,794,110         | 641,280,997        | 251,352,322                   | 265,186,179   | 39,129,421                           | 85,593,075                              | 1931 | 162,000,969                           | 44,442,145         | 137,090,162        |

Expenditures for Equipment and Machinery amounted to \$21,809,773 in 1921.  
Figures for the other years were not available.

Note: U. S. Bureau of Public Roads Discontinued Regular Compilation of Local Road Data After 1931.

## STATE HIGHWAY EXPENDITURES

Source: Public Roads Administration Data

| Total Disbursements | Total Expenditures | Construction And Right-Of-Way | Maintenance   | Miscellaneous Expense Administrative | Equipment And Machinery | Interest On Bonds And Notes Outstanding | Year | Principal Payments On Bonds And Notes | Transfers Local | Other Obligations Assumed | Unexpended Balance |
|---------------------|--------------------|-------------------------------|---------------|--------------------------------------|-------------------------|---|------|---------------------------------------|-----------------|---------------------------|--------------------|
| \$ 397,483,721      | \$364,361,342      | \$284,302,460                 | \$ 64,833,139 | \$18,417,308                         | \$ 8,411,599            | \$10,416,836                            | 1921 | \$ 6,631,016                          | \$ 6,451,343    | \$                        | \$                 |
| 451,778,710         | 410,901,077        | 287,461,018                   | 75,340,491    | 19,976,406                           | 12,070,362              | 18,062,800                              | 1922 | 6,205,199                             | 34,669,434      |                           | 138,834,354        |
| 447,355,358         | 414,507,454        | 279,925,708                   | 79,329,158    | 26,407,129                           | 15,556,290              | 17,528,069                              | 1923 | 14,951,287                            | 17,605,647      |                           | 159,012,845        |
| 605,645,207         | 559,601,149        | 382,335,696                   | 104,806,257   | 31,165,091                           | 19,792,146              | 21,800,649                              | 1924 | 17,384,431                            | 28,649,627      |                           | 106,359,540        |
| 649,120,101         | 597,902,378        | 389,387,384                   | 119,305,560   | 36,612,063                           | 22,497,280              | 28,161,063                              | 1925 | 25,647,232                            | 23,375,497      |                           | 130,966,191        |
| 621,744,210         | 576,616,847        | 356,174,616                   | 125,617,313   | 38,250,111                           | 22,284,756              | 35,690,021                              | 1926 | 31,679,325                            | 23,848,058      |                           | 194,943,398        |
| 707,179,148         | 640,494,988        | 404,217,317                   | 159,785,358   | 48,825,297                           | 15,350,076              | 35,280,621                              | 1927 | 30,684,719                            | 35,969,560      |                           | 208,375,774        |
| 630,384,909         | 789,310,088        | 535,043,138                   | 159,807,723   | 4,011,620                            | 30,505,453              | 34,990,024                              | 1928 | 27,703,499                            | 35,895,350      | 7,357,992                 | 205,221,543        |
| 910,465,291         | 799,676,344        | 637,400,623                   | 173,040,381   | 5,224,358                            | 16,056,509              | 45,834,531                              | 1929 | 48,384,378                            | 42,791,374      | 22,433,195                | 284,289,723        |
| 1,129,676,601       | 979,997,647        | 713,117,048                   | 191,685,477   | 2,227,459                            | 22,301,723              | 60,666,141                              | 1930 | 69,504,631                            | 66,697,762      | 23,276,341                | 280,487,811        |
| 1,091,009,499       | 979,998,098        | 730,954,832                   | 140,980,079   | 4,312,553                            | 21,462,550              | 61,682,079                              | 1931 | 57,278,207                            | 32,949,431      | 21,169,768                | 276,960,964        |
| 958,444,370         | 819,785,461        | 581,645,869                   | 169,479,289   | 4,616,117                            | 22,131,907              | 69,292,199                              | 1932 | 54,379,764                            | 34,324,788      | 49,076,326                | 218,130,103        |
| 782,006,187         | 666,061,710        | 446,841,168                   | 139,829,660   | 4,623,151                            | 15,246,798              | 60,320,943                              | 1933 | 56,308,935                            | 42,797,410      | 16,838,074                | 175,117,533        |
| 991,774,000         | 845,631,000        | 554,278,000                   | 178,999,000   | 34,676,000                           | 6,175,000               | 67,303,000                              | 1934 | 58,576,000                            | 66,028,000      | 23,337,000                | 303,868,000        |
| 848,388,000         | 713,068,000        | 416,412,000                   | 184,458,000   | 37,459,000                           | 6,819,000               | 67,918,000                              | 1935 | 55,756,000                            | 58,166,000      | 21,367,000                | 357,590,000        |
| 1,131,131,000       | 947,028,000        | 607,284,000                   | 219,202,000   | 47,134,000                           | 7,005,000               | 66,442,000                              | 1936 | 79,171,000                            | 79,225,000      | 25,640,000                | 374,617,000        |
| 1,106,708,000       | 919,768,000        | 581,979,000                   | 227,877,000   | 62,395,000                           | 10,711,000              | 65,824,000                              | 1937 | 75,444,000                            | 129,212,000     | 25,037,000                | 415,104,000        |
| 1,135,138,000       | 890,038,000        | 583,815,000                   | 227,711,000   | 65,460,000                           | 8,194,000               | 65,382,000                              | 1938 | 64,711,000                            | 134,020,000     | 26,369,000                | 378,482,000        |

## RURAL HIGHWAY EXPENDITURES, 1921-1931

Source: Public Roads Administration

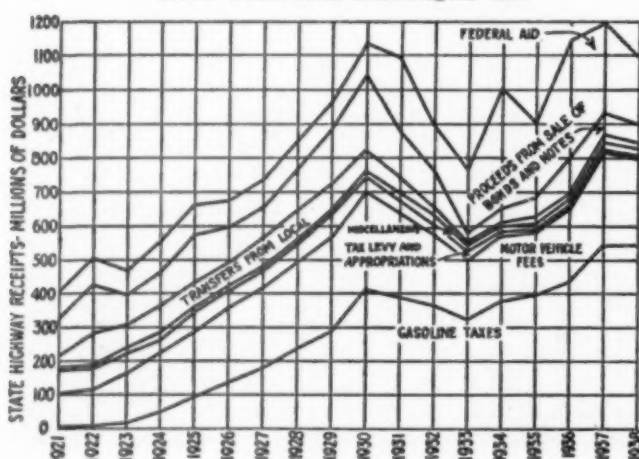
| Total Disbursements | Total Expenditures | Construction And Right-Of-Way | Maintenance   | Miscellaneous Expense Administrative | Equipment And Machinery | Interest On Bonds And Notes Outstanding | Year | Principal Payments On Bonds And Notes | Other Obligations | Unexpended Balance |
|---------------------|--------------------|-------------------------------|---------------|--------------------------------------|-------------------------|---|------|---------------------------------------|-------------------|--------------------|
| \$1,027,390,489     | \$ 981,000,059     | \$ 621,677,968                | \$250,959,385 | \$55,606,213                         | \$ 8,411,599            | \$ 44,344,674                           | 1921 | \$ 46,398,430                         | \$                | \$191,660,600      |
| 1,047,108,276       | 1,000,901,077      | 617,461,018                   | 260,340,491   | 59,976,406                           | 12,070,362              | 51,052,800                              | 1922 | 48,205,199                            |                   | 168,834,354        |
| 1,007,899,798       | 936,493,223        | 522,277,923                   | 259,555,758   | 71,849,603                           | 15,556,290              | 67,253,379                              | 1923 | 71,096,575                            |                   | 174,238,350        |
| 1,177,433,048       | 1,063,219,781      | 636,171,759                   | 299,620,681   | 59,424,408                           | 19,792,146              | 76,009,707                              | 1924 | 84,213,347                            |                   | 152,405,314        |
| 1,241,049,093       | 1,141,369,513      | 654,893,148                   | 312,877,078   | 69,696,207                           | 22,497,280              | 80,005,603                              | 1925 | 99,679,560                            |                   | 272,054,316        |
| 1,876,697,894       | 1,163,747,971      | 621,692,855                   | 338,855,362   | 80,341,798                           | 22,284,756              | 100,375,200                             | 1926 | 112,949,623                           |                   | 367,074,651        |
| 1,419,435,323       | 1,283,944,336      | 693,397,672                   | 378,753,825   | 90,106,162                           | 11,896,601              | 110,296,076                             | 1927 | 135,490,967                           |                   | 398,919,870        |
| 1,556,863,410       | 1,418,540,212      | 620,357,853                   | 419,560,981   | 41,356,946                           | 20,505,483              | 116,756,949                             | 1928 | 130,985,206                           | 7,357,992         | 361,303,654        |
| 1,615,819,338       | 1,444,666,985      | 613,982,436                   | 433,536,122   | 54,980,317                           | 18,056,509              | 124,111,601                             | 1929 | 148,417,188                           | 22,433,195        | 430,104,723        |
| 1,606,660,514       | 1,600,493,095      | 1,009,711,591                 | 475,912,437   | 39,894,276                           | 22,301,723              | 133,273,066                             | 1930 | 162,061,078                           | 23,276,341        | 405,593,595        |
| 1,861,392,035       | 1,620,883,090      | 982,307,154                   | 426,166,258   | 43,441,974                           | 21,462,550              | 147,455,154                             | 1931 | 219,369,175                           | 21,169,768        | 434,051,128        |

Total Expenditures:- 1904 - \$79,595,418; 1914 - \$249,055,067.

Note: See Introductory Reading Page. No Data on Local Roads Compiled for Publication After 1931.

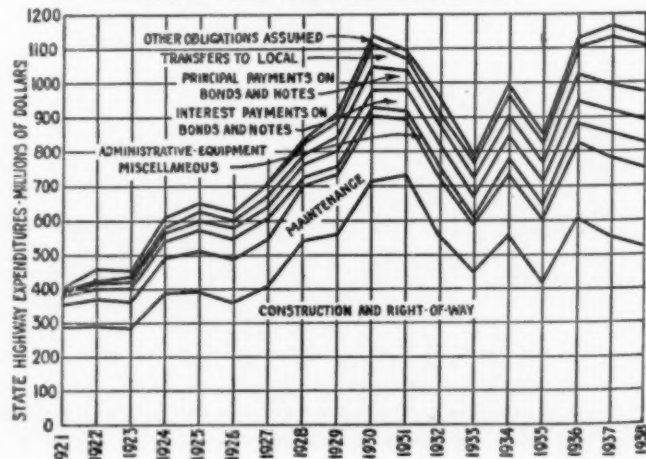
## STATE HIGHWAY RECEIPTS BY SOURCES

Source: Public Roads Administration Data



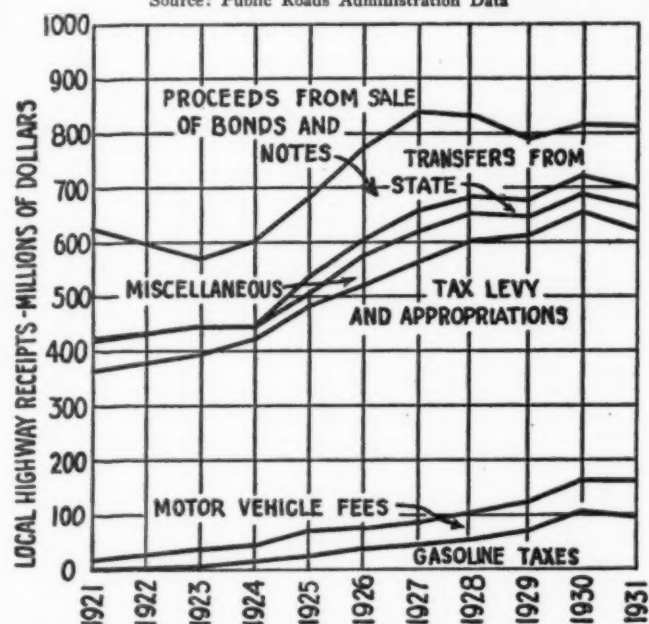
## STATE HIGHWAY EXPENDITURES BY PURPOSES

Source: Public Roads Administration Data



## LOCAL HIGHWAY RECEIPTS BY SOURCES

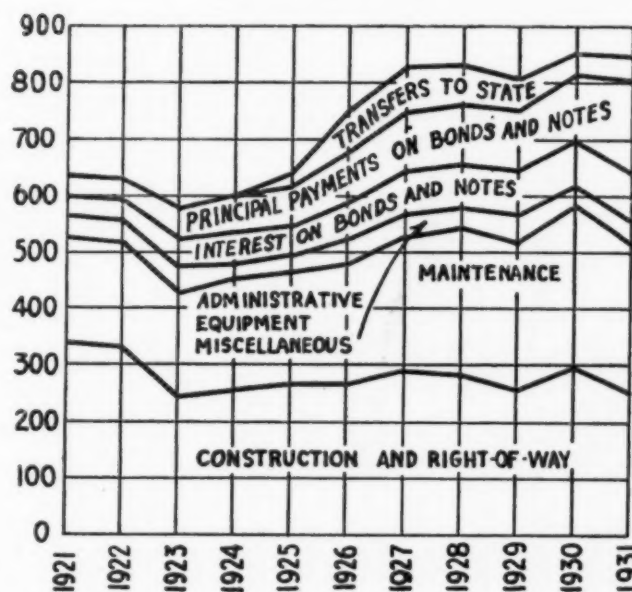
Source: Public Roads Administration Data



Note: Because of Inaccuracies Local Road Data Not Published After 1931.

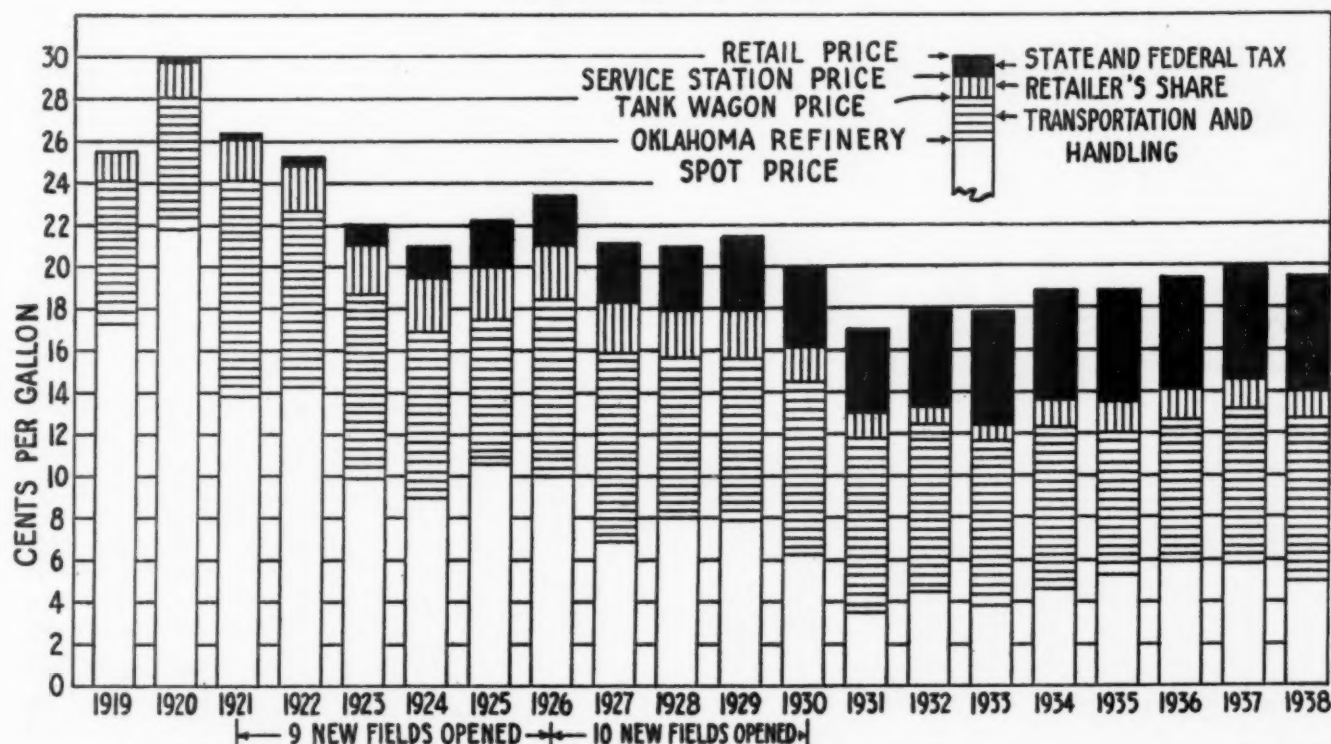
## LOCAL HIGHWAY EXPENDITURES BY PURPOSES

Source: Public Roads Administration Data



## DISTRIBUTION OF COST OF A GALLON OF MOTOR FUEL

Source: Public Roads Administration



## STATE HIGHWAY EXPENDITURES—1938

Source: Public Roads Administration Revised November 1939

## Expenditures for State-Administered Highways

## Capital Outlay

Total ..... \$ 523,315,000

## Class of Expenditure:

Acquisition of right-of-way..... 20,330,000

Construction of roads..... 453,296,000

Construction of bridges, etc..... 49,689,000

## System On Which Expended:

Primary state highways (rural)..... 456,894,000

Secondary roads under state control..... 31,138,000

Urban extensions of state system..... 35,283,000

## Maintenance

Total ..... 227,711,000

## System On Which Expended

Primary state highways (rural)..... 181,759,000

|  |               |
|--|---------------|
| Secondary roads under state control.....                 | 38,764,000    |
| Urban extensions of state system.....                    | 7,188,000     |
| Net Expenditures for Equipment.....                      | 8,194,000     |
| Administrative, Engineering and Miscellaneous..          | 47,790,000    |
| State Highway Police.....                                | 17,700,000    |
| Interest On State Highway Obligations.....               | 65,322,000    |
| Total Expenditures For State Administered Highways ..... | 890,032,000   |
| Retirement of State Highway Obligations.....             | 84,711,000    |
| Other Expenditures or Fund Transfers:                    |               |
| For Local Roads and Streets.....                         | 126,330,000   |
| For Other Highways Not on State System.....              | 7,690,000     |
| For Non-Highway Purposes.....                            | 26,359,000    |
| Total Expenditures .....                                 | 1,135,122,000 |
| Balances On Hand, December 31, 1938                      |               |
| Highway Funds .....                                      | 179,113,000   |
| Reserves for Debt Service.....                           | 199,309,000   |



STATE HIGHWAY EXPENDITURE FOR CALENDAR YEAR 1938 FROM REPORTS OF STATE AUTHORITIES.<sup>1</sup>

Source: Hearings on H. R. 7891—76th Congress

(Thousands of dollars)

| State                        | Expenditures for State-administered highways |                              |                       |                               |                                |  |                                  |         |                                |  |                                  |       |   |   |                                   |  |  | Other expenditures or fund transfer:                 |  |  | Balances on hand, Dec. 31, 1938 <sup>11</sup> |                    |               |                           |         |
|------------------------------|--|------------------------------|-----------------------|-------------------------------|--------------------------------|--|----------------------------------|---------|--------------------------------|--|----------------------------------|-------|---|---|-----------------------------------|--|--|--|--|--|---|--------------------|---------------|---------------------------|---------|
|                              | Capital outlay <sup>1</sup>                  |                              |                       |                               |                                |  | Maintenance <sup>1</sup>         |         |                                |  |                                  |       | Net expenditures for equipment <sup>4</sup> | Administrative, engineering, and miscellaneous <sup>5</sup> | State highway police <sup>7</sup> | Interest on State-highway obligations <sup>1</sup> | Total expenditures for State-administered highways | Retirement of State-highway obligations <sup>1</sup> | For local roads and streets <sup>1</sup> | For other highways not on State system <sup>10</sup> | For nonhighway purposes <sup>11</sup>         | Total expenditures | Highway funds | Reserves for debt service |         |
|                              | Class of expenditure                         |                              |                       | System on which expended      |                                |  | System on which expended         |         |                                |  |                                  |       |   |   |                                   |  |  |  |  |  |   |                    |               |                           |         |
|                              | Total  | Acquisition of rights-of-way | Construction of roads | Construction of bridges, etc. | Primary State highways (rural) | Secondary roads under State control <sup>2</sup> | Urban extensions of State system | Total   | Primary State highways (rural) | Secondary roads under State control <sup>2</sup> | Urban extensions of State system |       |   |   |                                   |  |  |  |  |  |   |                    |               |                           |         |
| Alabama.....                 | 12,378                                       | 47                           | 12,190                | 141                           | 12,118                         | 260  | 1,981                            | 1,981   | —                              | —  | —                                | —     | 119   | 858   | 407                               | 1,867  | 17,372   | 2,508  | —  | —  | —   | 19,880             | 862           | 638                       |         |
| Arizona.....                 | 4,361  | 57                           | 4,213                 | 91                            | 4,290                          | 71   | 1,339                            | 1,339   | —                              | —  | —                                | —     | —   | 174   | 401                               | 158  | 6,433  | —  | —  | 142  | —   | —                  | 6,580         | —                         | —       |
| Arkansas.....                | 2,529  | —                            | 2,529                 | —                             | 2,529                          | —  | —                                | —       | —                              | —  | —                                | —     | —   | —   | —                                 | —  | —  | —  | —  | —  | —   | 18,017             | 2,154         | 79                        |         |
| California.....              | 26,290                                       | 2,566                        | 10,203                | 4,491                         | 20,139                         | 6,121  | 11,206                           | 10,318  | 888                            | 301  | 1,958                            | —     | —   | 2,101   | 41,826                            | 1,775  | 4,056  | 52   | —  | —  | 48,609  | 3,783              | —             |                           |         |
| Colorado.....                | 14,058                                       | —                            | 14,058                | —                             | 9,707                          | 3,885  | 466                              | 1,408   | —                              | —  | —                                | —     | —   | 249   | 989                               | 333  | 761  | 17,798   | 246                                      | —  | —   | 18,044             | 2,002         | 833                       |         |
| Connecticut.....             | 8,346  | —                            | 6,583                 | 1,766                         | 7,990                          | 369  | 3,352                            | 3,352   | —                              | —  | —                                | —     | —   | 66  | 378                               | 325  | 12,755   | 1,809  | —  | —  | 17,528  | 10,416             | —             |                           |         |
| Delaware.....                | 1,817  | 136                          | 1,409                 | 272                           | 1,708                          | 49   | 806                              | 360     | 446                            | 184  | 158                              | —     | —   | 184   | 158                               | 250  | 3,514  | 370  | —  | 24   | —   | 4,140              | 866           | 66                        |         |
| Florida.....                 | 7,623  | —                            | 7,370                 | 253                           | 7,482                          | 143  | 2,895                            | 2,895   | —                              | —  | —                                | —     | —   | 89  | 371                               | 29   | 11,071   | 121  | —  | 29   | —   | 11,221             | 250           | —                         |         |
| Georgia.....                 | 18,333                                       | —                            | 15,104                | 3,229                         | 16,709                         | 1,624  | 1,808                            | 1,808   | —                              | —  | —                                | —     | —   | 0   | 1,119                             | —  | 21,290   | 2,666  | 1,570                                    | —  | —   | 25,502             | 1,403         | —                         |         |
| Idaho.....                   | 5,047  | —                            | 5,047                 | —                             | 4,967                          | 80   | 1,632                            | 1,632   | —                              | —  | —                                | —     | —   | 87  | 272                               | 15   | 21,048   | 157  | —  | —  | 7,203   | 191                | 20            |                           |         |
| Illinois.....                | 18,111                                       | —                            | 18,111                | —                             | 15,254                         | 2,877  | 5,451                            | 5,002   | 449                            | 1,303  | 3,326                            | 1,377 | 5,189                                       | 34,757  | 4,505                             | 19,928   | 9,176  | —  | 9,176                                    | 68,368   | 21,094  | —                  |               |                           |         |
| Indiana.....                 | 14,317                                       | 791                          | 10,745                | 2,781                         | 14,153                         | 164  | 5,965                            | 5,685   | 380                            | 147  | 1,367                            | —     | —   | 21,796  | 6,008                             | —  | 767  | —  | 110                                      | 22,673   | 613   | —                  |               |                           |         |
| Iowa.....                    | 14,432                                       | 679                          | 11,443                | 2,613                         | 12,275                         | 2,157  | 3,141                            | 3,012   | 129                            | 1,133  | 399                              | —     | —   | 2,199   | 21,307                            | 6,008  | 58   | —  | —  | 27,373   | 3,146   | —                  |               |                           |         |
| Kansas.....                  | 7,995  | 619                          | 6,000                 | 1,076                         | 7,008                          | 687  | 4,865                            | 4,794   | 71                             | 409  | 704                              | 173   | 123   | 13,969  | 1,464                             | 3,788  | —  | —  | —  | 19,221   | 1,672   | 267                |               |                           |         |
| Kentucky.....                | 13,203                                       | —                            | 12,303                | 900                           | 12,458                         | 745  | 5,080                            | 5,080   | 526                            | 1,002  | 303                              | 351   | 20,465                                      | 2,074   | 2,291                             | —  | —  | —  | —  | 24,530   | 1,234   | 140                |               |                           |         |
| Louisiana.....               | 11,890                                       | —                            | 11,890                | —                             | 11,333                         | 557  | 4,280                            | 4,280   | 1,164                          | 481  | 325                              | 4,542 | 22,682                                      | 2,461   | —                                 | —  | —  | —  | —  | 25,143   | 326   | 5,505              |               |                           |         |
| Maine.....                   | 6,037  | 130                          | 4,727                 | 1,180                         | 4,004                          | 2,024  | 9                                | 4,117   | 2,641                          | 1,476  | 6                                | 436   | 294   | 1,032   | 11,922                            | 1,726  | 875  | —  | —  | 14,523   | 2,013   | 490                |               |                           |         |
| Maryland.....                | 7,643  | 489                          | 6,024                 | 1,130                         | 7,514                          | 129  | 1,368                            | 1,368   | 412                            | 712  | 417                              | 599   | 11,151                                      | 2,006   | 4,796                             | —  | —  | —  | —  | 17,956   | 1,424   | 370                |               |                           |         |
| Massachusetts.....           | 8,470  | 813                          | 4,593                 | 3,364                         | 8,202                          | 208  | 4,862                            | 4,862   | 0                              | 485  | 350                              | 279   | 14,446                                      | 3,470   | 14,048                            | 922  | 1,800  | —  | —  | 34,693   | 10,763  | 1,732              |               |                           |         |
| Michigan.....                | 14,931                                       | 1,538                        | 10,168                | 3,205                         | 14,331                         | 600  | 7,551                            | 7,551   | 176                            | 565  | —                                | —     | —   | 1,973   | 25,190                            | 32   | —  | —  | —  | 25,226   | 417   | 35,129             |               |                           |         |
| Minnesota.....               | 15,082                                       | 1,813                        | 12,360                | 989                           | 12,905                         | 2,177  | 5,414                            | 5,215   | —                              | —  | —                                | —     | —   | 236   | 385                               | 320  | 1,669  | 22,521   | 2,452                                    | 154  | —   | 25,130             | 1,494         | 681                       |         |
| Mississippi.....             | 19,745                                       | 623                          | 19,032                | 90                            | 19,541                         | 291  | 1,808                            | 1,808   | 170                            | 331  | 21                               | 894   | 23,099                                      | 2,563   | 61                                | 92   | —  | —  | —  | 25,615   | 8,250   | 1,104              |               |                           |         |
| Missouri.....                | 7,630  | 274                          | 5,521                 | 1,835                         | 4,639                          | 1,165  | 4,290                            | 2,677   | 1,053                          | 560  | 0                                | 1,383 | 601   | 4,112   | 18,016                            | 5,217  | 392  | —  | —  | 23,625   | 869   | 2,294              |               |                           |         |
| Montana.....                 | 2,984  | 139                          | 1,862                 | 983                           | 2,947                          | 316  | 1,698                            | 1,698   | 215                            | 454  | 124                              | 124   | 5,675                                       | 432   | —                                 | —  | —  | —  | 6  | 6,113  | 787   | 915                |               |                           |         |
| Nebraska.....                | 7,626  | 432                          | 6,148                 | 1,026                         | 7,240                          | 386  | 3,157                            | 3,157   | —                              | —  | —                                | —     | —   | 129   | 491                               | 100  | 11,245   | —  | —  | 344  | 11,589  | —                  | —             |                           |         |
| Nevada.....                  | 2,831  | 28                           | 2,401                 | 402                           | 2,697                          | 655  | 79                               | 825     | 757                            | 63   | 5                                | 235   | 36  | 10  | 3,942                             | 82   | —  | —  | 31                                       | 4,143  | —   | —                  |               |                           |         |
| New Hampshire.....           | 2,430  | 129                          | 2,100                 | 201                           | 1,437                          | 988  | 8                                | 1,370   | 1,577                          | 1,569  | —                                | —     | —   | 9   | 545                               | 75   | 247  | 6,476  | 550                                      | 758  | 7,787   | 2,688              | 1,029         |                           |         |
| New Jersey.....              | 10,579                                       | 2,195                        | 6,896                 | 1,518                         | 10,316                         | 263  | 3,496                            | 3,496   | 244                            | 897  | 566                              | 3,978 | 19,760                                      | 2,620   | 10,663                            | 425  | 5,500  | —  | —  | 38,968   | 8,183   | 47,172             |               |                           |         |
| New Mexico.....              | 7,018  | 34                           | 5,758                 | 1,226                         | 6,885                          | 133  | 1,669                            | 1,669   | 112                            | 1,006  | —                                | —     | —   | 112   | 1,006                             | —  | 6,637  | 1,095  | —  | 11,567   | 1,077   | 167                |               |                           |         |
| New York.....                | 34,238                                       | —                            | 34,238                | —                             | 33,368                         | 867  | 8,837                            | 8,837   | —                              | —  | —                                | —     | —   | 0   | 976                               | 1,364  | 7,932  | 54,367   | 2,031                                    | 24,865   | 5,680   | 91,068             | 14,611        |                           |         |
| North Carolina.....          | 10,674                                       | —                            | 10,674                | —                             | 7,254                          | 2,317  | 1,103                            | 13,724  | 5,086                          | 8,172  | 466                              | —     | —   | 232   | 688                               | 426  | 3,735  | 29,025   | 4,971                                    | —  | 34,032  | 10,274             | 5,840         |                           |         |
| North Dakota.....            | 4,050  | 29                           | 3,529                 | 493                           | 3,567                          | 483  | 1,680                            | 1,680   | —                              | —  | —                                | —     | —   | 316   | 329                               | 57   | 6,438  | 500  | 859                                      | —  | 7,497   | 145                | —             |                           |         |
| Ohio.....                    | 14,244                                       | 789                          | 13,455                | —                             | 12,269                         | 2,035  | 13,967                           | 13,967  | 794                            | 2,715  | 701                              | —     | —   | —   | 32,421                            | —  | —  | —  | 336                                      | 33,388   | 12,856  | —                  |               |                           |         |
| Oklahoma.....                | 11,058                                       | 398                          | 10,660                | —                             | 10,488                         | 570  | 2,963                            | 2,963   | —                              | —  | —                                | —     | —   | 137   | 1,318                             | —  | 15,202   | —  | —  | 15,402   | —   | —                  |               |                           |         |
| Oregon.....                  | 5,219  | 869                          | 3,933                 | 687                           | 3,591                          | 605  | 1,023                            | 3,424   | 2,542                          | 657  | 225                              | —     | —   | 122   | 867                               | 348  | 878  | 10,614   | 3,550                                    | 2,538  | 118   | 16,820             | 760           |                           |         |
| Pennsylvania.....            | 28,707                                       | 865                          | 22,820                | 5,022                         | 14,663                         | 10,636   | 3,408                            | 37,482  | 16,566                         | 17,719   | 3,197                            | 1,082 | 11,466                                      | 5,925   | 2,892                             | 85,370   | 2,000  | 5,068  | 219                                      | 983  | 93,640  | 16,330             | 10,755        |                           |         |
| Rhode Island.....            | 1,930  | 291                          | 1,328                 | 311                           | 1,579                          | 351  | 1,238                            | 1,190   | —                              | —  | —                                | —     | —   | 61  | 272                               | 187  | 227  | 3,915  | —  | 28   | 3,605   | 7,548              | 822           | 1,492                     |         |
| South Carolina.....          | 12,339                                       | 694                          | 11,745                | —                             | 12,033                         | 306  | 3,231                            | 3,231   | 56                             | 736  | 360                              | 2,500 | 19,222                                      | 3,335   | —                                 | —  | —  | —  | —  | 22,557   | 3,977   | 606                |               |                           |         |
| South Dakota.....            | 5,094  | —                            | 4,219                 | 875                           | 4,774                          | 330  | 1,777                            | 1,777   | —                              | —  | —                                | —     | —   | 0   | 362                               | 17   | 7,250  | —  | —  | 268  | 40  | 7,558              | 520           |                           |         |
| Tennessee.....               | 8,215  | —                            | 8,130                 | 85                            | 8,055                          | 109  | 2,413                            | 2,413   | 335                            | 815  | —                                | 4,959 | 16,737                                      | 1,777   | 2,135                             | —  | —  | —  | 8  | 20,657   | 6,716   | 15,836             |               |                           |         |
| Texas.....                   | 29,464                                       | —                            | 29,464                | —                             | 28,582                         | 882  | 8,805                            | 8,805   | 421                            | 1,454  | 678                              | 40    | 822   | —   | 421                               | 1,454  | 678  | 40   | 822                                      | —  | 42,262  | 4,221              | 46,483        |                           |         |
| Utah.....                    | 3,884  | 134                          | 3,450                 | —                             | 3,450                          | 134  | 1,522                            | 1,522   | 390                            | 252  | 117                              | 235   | 5,979                                       | —   | 235                               | 5,979  | —  | —  | —  | 6,967  | 290   | 4,875              |               |                           |         |
| Vermont.....                 | 2,303  | —                            | 2,266                 | 97                            | 2,325                          | 36   | 1,503                            | 1,503   | —                              | —  | —                                | —     | —   | 0   | 184                               | 100  | 4,150  | 788  | 1,900                                    | 6  | 46  | 6,889              | 2,371         | —                         |         |
| Virginia.....                | 21,565                                       | 874                          | 18,597                | 2,094                         | 17,445                         | 4,005  | 115                              | 5,549   | 2,403                          | 2,780  | 360                              | —     | —   | 10  | 888                               | —  | 141  | 28,133   | 1,000                                    | 136  | 37  | 29,306             | 2,171         | 2,330                     |         |
| Washington.....              | 10,869                                       | 989                          | 6,613                 | 3,267                         | 8,522                          | 2,087  | 3,469                            | 2,287   | 1,147                          | 25   | —                                | —     | —   | 148   | 805                               | 825  | 55   | 15,865   | 73                                       | 7,879  | 651   | 24,468             | 923           | 2,700                     |         |
| West Virginia.....           | 10,043                                       | 715                          | 9,328                 | —                             | 7,695                          | 1,799  | 549                              | 6,172   | 2,520                          | 3,652  | —                                | —     | —   | 836   | 546                               | —  | 3,100  | 20,697   | 4,616                                    | —  | 25,313  | 2,324              | 3,667         |                           |         |
| Wisconsin.....               | 12,380                                       | 801                          | 9,505                 | 2,074                         | 11,917                         | 463  | 6,028                            | 5,842   | —                              | —  | —                                | —     | —   | —   | 788                               | —  | 19,194   | 3,889  | 9,044                                    | 159  | 33,991  | 15,488             | —             |                           |         |
| Wyoming.....                 | 3,865  | —                            | 3,865                 | —                             | 3,817                          | 48   | 852                              | 852     | —                              | —  | —                                | —     | —   | 222   | 94                                | 69   | 129  | 5,231  | 165                                      | —  | 5,415   | 356                | 58            |                           |         |
| Subtotal <sup>14</sup> ..... | 20,330                                       | 453                          | 296                   | 49,689                        | 456,894                        | 31,138   | 35,283                           | 227,711 | 181,759                        | 38,764   | 7,188                            | —     | —   | 8,194   | 47,700                            | 17,700   | 65,322   | 890,032  | 84,711                                   | 126,330  | 7,690   | 26,359             | 1,135,122     | 179,113                   | 199,309 |
| Total.....                   | 523,315                                      | —                            | —                     | —                             | —                              | —  | —                                | —       | —                              | —  | —                                | —     | —   | —   | —                                 | —  | —  | —  | —  | —  | —   | —                  | —             | —                         | —       |

<sup>1</sup> In order to obtain uniform data on State-highway finance for all States, the reported income and expenditures of the State highway departments have been amplified, when necessary, by the addition of transactions relating to debt-service operations of special bridge and grade-separation authorities, expenditures of local authorities on State highways, and similar transactions.

<sup>2</sup> Segregation of construction expenditures by class of expenditure and system on which expended is incomplete in many States. Where expenditures were not segregated the total is given under the headings "Construction of roads" and "Primary State highways (rural)."

<sup>3</sup> In addition to the States reporting expenditures on secondary roads under State control, California, Louisiana, and Mississippi reported secondary State highway systems, but did not segregate expenditures on these roads from those on the primary systems. Expenditures reported for Delaware, North Carolina, Virginia, and West Virginia were made on county road systems under State control.

<sup>4</sup> Includes regular maintenance of roads and bridges, snow removal, highway marking and signs, and maintenance of drawbridges, ferries, and other highway utilities. Segregation of maintenance expenditures by system on which expended was incomplete in many States. Where expenditures were not segregated the total is given under the heading "Primary State highways (rural)."

<sup>5</sup> In most States equipment costs are charged to construction and maintenance projects, generally through a system of rentals. In these cases only the net debit or credit in the equipment account is shown. Credits are indicated by minus signs.

<sup>6</sup> The classification of administrative, engineering, and miscellaneous expenditures is not uniform, as most States charge all or a large portion of engineering costs to construction and maintenance.

<sup>7</sup> Expenditures for State-highway police are recorded in the case of those States which reported such expenditures as a part of their State-highway finances.

<sup>8</sup> Includes debt service on State-highway bonds, notes, etc., and on county or local obligations assumed as reimbursement for local roads added to the State system. Payments to sinking fund are not included, as they are merely transfers from highway funds to reserves for debt service.

<sup>9</sup> Includes expenditures by or under supervision of State highway departments on local roads and streets, and transfers to local units for work on local roads and streets or for service of local highway obligations, in cases where such transfers were reported as expenditures of the State highway departments.

<sup>10</sup> Expenditures on forest roads, park roads, etc., not reported as part of State highway system or as local roads or streets.

<sup>11</sup> Includes expenditures or transfers for relief of unemployment or destitution, transfers to State general funds, and other nonhighway expenditures.

<sup>12</sup> Wherever possible, balances in sinking funds or other reserves for the payment of principal and interest on State highway obligations have been segregated from other highway funds. Minus signs indicate deficits.

<sup>13</sup> In order to provide a complete statement of income and expenditures for State highways, the reported transactions of the division of highways have been combined with those relating to State highway debt service and those of other State agencies which expend funds on highways, bridges, and grade-crossing elimination.

<sup>14</sup> Incomplete classification of construction and maintenance expenditures shown on this line. See footnotes 2 and 4.

## STATE HIGHWAY DEPARTMENT RECEIPTS, CALENDAR YEAR 1938

Source: American Association of State Highway Officials in Hearings on H. R. 7891



## DISPOSITION OF RECEIPTS FROM STATE IMPOSTS ON HIGHWAY USERS—1938

Issued July, 1939. Revised November, 1939

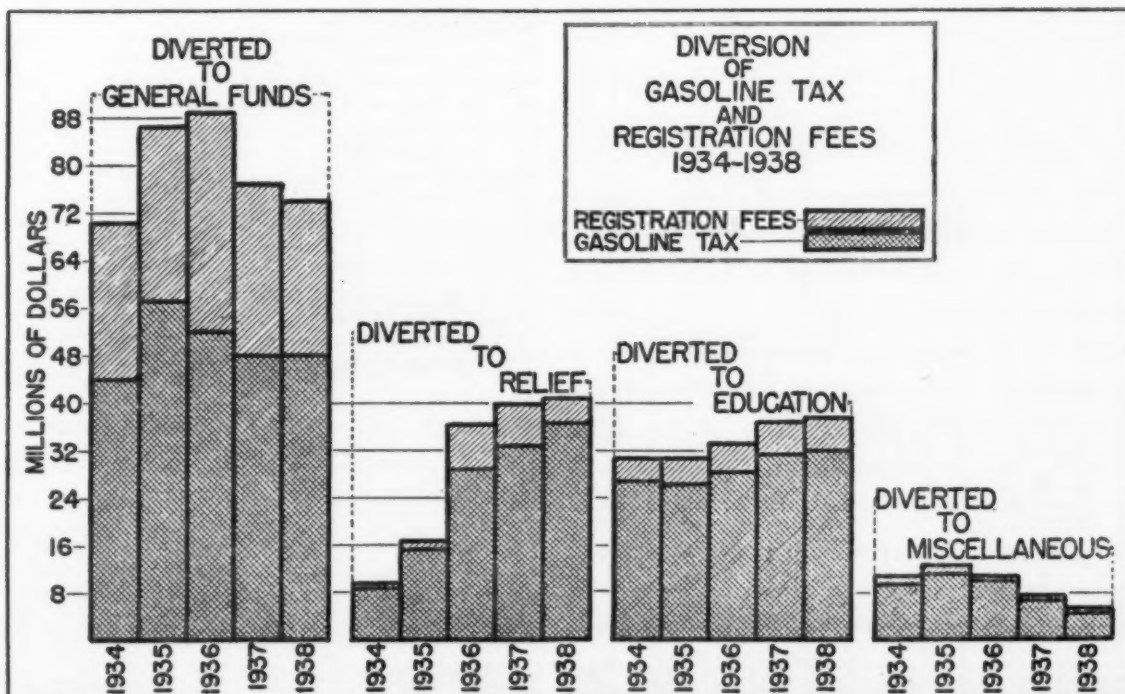
Source: Public Roads Administration

| STATE              | NET<br>TOTAL<br>RECEIPTS<br>FOR<br>CALENDAR<br>YEAR<br>1/ | ADJUST-<br>MENTS<br>DUE TO<br>UNRE-<br>CORDED<br>FUNDS,<br>ETC.<br>2/ | NET<br>TOTAL<br>DUE TO<br>UNRE-<br>CORDED<br>FUNDS,<br>DISTRIB-<br>UTED<br>3/ | EXPENSES<br>OF<br>CON-<br>STRUCTION<br>AND<br>MAINTENANCE<br>4/ | FOR STATE HIGHWAY PURPOSES                            |   |                             |              | FOR LOCAL ROADS AND STREETS 5/                        |  |   |              | FOR NEIGHBORLY PURPOSES                                       |  |   |   | TOTAL  |                                     |  |                  |         |
|--------------------|---|---|---|---|---|---|-----------------------------|--------------|---|--|---|--------------|---|--|---|---|--------|-------------------------------------|--|------------------|---------|
|                    |   |   |   |   | SERVICE OF STATE<br>HIGHWAY OBLIGATIONS               |   |                             |              | TOTAL<br>FOR<br>LOCAL<br>ROADS AND<br>STREETS<br>6/   |  |   |              | TOTAL<br>FOR<br>OTHER<br>LOCAL<br>ROADS AND<br>STREETS<br>7/  |  |   |   |        | TOTAL<br>FOR<br>GENERAL PURPOSES 8/ |  |                  |         |
|                    |   |   |   |   | STATE<br>HIGHWAY<br>COMMISSION<br>AND<br>POLICE<br>9/ | STATE<br>HIGHWAY<br>COMMISSION<br>LOCAL<br>OBLIGATIONS<br>10/ | LOCAL<br>OBLIGATIONS<br>11/ | TOTAL<br>12/ | FOR<br>COUNTY<br>LOCAL<br>ROADS AND<br>STREETS<br>13/ | FOR<br>CITY OR<br>LOCAL<br>ROADS AND<br>STREETS<br>14/ | SERVICE<br>OF<br>LOCAL<br>HIGHWAY<br>OBLIGATIONS<br>15/ | TOTAL<br>16/ | FOR<br>OTHER<br>LOCAL<br>ROADS AND<br>STREETS,<br>ETC.<br>17/ | MOTOR-<br>VEHICLE<br>TAXES,<br>FEES,<br>DEALERS'<br>LICENSES,<br>ETC.<br>18/ | ALL<br>OTHER<br>HIGHWAY<br>USER<br>IMPOSTS<br>19/ | FOR<br>RELIEF<br>OF UN-<br>DER-<br>DEVELOP-<br>MENT OR<br>DEVELOP-<br>MENT<br>20/ |        | FOR<br>EDUCATION<br>21/             | FOR<br>OTHER<br>LOCAL<br>PURPOSES<br>22/ | 1,000<br>DOLLARS |         |
| ALABAMA            | 18,090  | -507  | 17,583  | 637   | 5,300   | 402   | 8,362                       | 1,060        | 1,060   | 6,161  | -   | 6,161        | -   | -  | 723   | -   | -      | 723                                 | 9  |                  |         |
| ALASKA             | 5,945   | -   | 5,945   | 235   | 7,713   | 136   | 5,777                       | 5,777        | -   | -  | -   | -            | -   | -  | -   | -   | -      | -                                   | -  |                  |         |
| ARIZONA            | 13,001  | -   | 13,001  | 235   | 7,713   | 136   | 5,777                       | 5,777        | -   | -  | -   | -            | -   | -  | -   | -   | -      | -                                   | -  |                  |         |
| CALIFORNIA         | 77,182  | 1,150   | 76,972  | 8,605   | 31,393  | 3,070   | 1,070                       | 3,070        | 1,070   | 3,197  | -   | 3,197        | -   | -  | 9,959   | 3,018   | -      | -                                   | 11,991                                   |                  |         |
| COLORADO           | 10,562  | -   | 10,562  | 425   | 5,979   | 333   | 5,646                       | 5,646        | -   | -  | -   | -            | -   | -  | -   | -   | -      | -                                   | -  |                  |         |
| CONNECTICUT        | 16,425  | 80  | 16,505  | 1,088   | 6,523   | 389   | 6,095                       | 6,095        | 1,004   | 3,097  | -   | 3,097        | -   | -  | -   | -   | -      | -                                   | -  |                  |         |
| DELAWARE           | 3,289   | -67   | 3,222   | 100   | 3,119   | 250   | 2,869                       | 2,869        | 2,869   | -  | -   | -            | -   | -  | -   | -   | -      | -                                   | -  |                  |         |
| FLORIDA            | 27,773  | 21  | 27,794  | 308   | 10,562  | 308   | 10,484                      | 10,484       | -   | -  | -   | -            | -   | -  | -   | -   | -      | -                                   | -  |                  |         |
| GEORGIA            | 27,483  | -10   | 27,493  | 594   | 11,176  | 279   | 10,917                      | 10,917       | 3,161   | -  | -   | 3,161        | -   | -  | -   | -   | -      | -                                   | -  |                  |         |
| ILLINOIS           | 6,326   | 28  | 6,354   | 115   | 8,321   | 167   | 8,154                       | 8,154        | 1,985   | -  | -   | 1,985        | -   | -  | -   | -   | -      | -                                   | -  |                  |         |
| INDIANA            | 54,175  | 614   | 54,789  | 1,355   | 14,995  | 1,377   | 13,618                      | 13,618       | 2,869   | 2,869  | 8,199   | 1,000        | -   | 164  | 91  | 6,875   | 6,958  | -                                   | 9,872                                    |                  |         |
| IOWA               | 23,112  | -3,627  | 19,485  | 1,333   | 7,182   | 303   | 19,182                      | 19,182       | 3,161   | -  | -   | 3,161        | -   | -  | -   | -   | -      | -                                   | -  |                  |         |
| KANSAS             | 29,568  | -17   | 29,551  | 1,293   | 9,878   | -   | 8,887                       | 8,887        | 18,095  | 6,423  | -   | 6,423        | -   | -  | -   | -   | -      | -                                   | -  |                  |         |
| KENTUCKY           | 15,136  | 304   | 15,440  | 1,008   | 5,884   | 173   | 5,711                       | 5,711        | 1,334   | 10,775   | 3,660   | 7,115        | -   | -  | -   | -   | -      | -                                   | -  |                  |         |
| LOUISIANA          | 17,560  | -9  | 17,569  | 577   | 12,709  | 303   | 17,266                      | 17,266       | 1,308   | 8,601  | -   | 8,601        | -   | -  | 1,051   | -   | -      | -                                   | 1,051                                    |                  |         |
| MAINE              | 29,570  | 198   | 29,768  | 336   | 3,284   | 334   | 10,699                      | 10,699       | 10,699  | 10,699   | -   | -            | -   | -  | 1,777   | 1,199   | 1,199  | -                                   | 7,095                                    |                  |         |
| MARYLAND           | 16,725  | 87  | 16,812  | 80  | 6,481   | 290   | 6,191                       | 6,191        | 8,887   | 8,887  | -   | 8,887        | -   | -  | -   | -   | -      | -                                   | -  |                  |         |
| MASSACHUSETTS      | 11,996  | -   | 11,996  | 130   | 3,169   | 303   | 3,609                       | 3,609        | 1,034   | 3,169  | 509   | 4,799        | -   | -  | -   | -   | -      | -                                   | -  |                  |         |
| MISSISSIPPI        | 27,052  | 6   | 27,058  | 1,791   | 6,548   | 350   | 10,738                      | 10,738       | 3,000   | 12,093   | 5,988   | -            | 10,464  | 500  | -   | 38  | 10,180 | -                                   | 1,087                                    |                  |         |
| MISSOURI           | 46,550  | -25   | 46,525  | 2,119   | 8,917   | 778   | 8,139                       | 8,139        | 1,985   | 1,985  | -   | 1,985        | -   | -  | -   | -   | -      | -                                   | -  |                  |         |
| MONTANA            | 11,996  | -   | 11,996  | 130   | 3,169   | 303   | 3,609                       | 3,609        | 1,034   | 3,169  | 509   | 4,799        | -   | -  | -   | -   | -      | -                                   | -  |                  |         |
| NEBRASKA           | 16,311  | -37   | 16,348  | 321   | 3,030   | 21  | 2,916                       | 2,916        | 2,916   | 2,916  | -   | 2,916        | -   | -  | -   | -   | -      | -                                   | -  |                  |         |
| NORTH CAROLINA     | 29,567  | -318  | 29,149  | 28,149  | 11,259  | 60  | 11,189                      | 11,189       | 3,161   | 1,161  | 307   | 1,468        | -   | -  | 67  | -   | -      | -                                   | 67                                       |                  |         |
| NORTH DAKOTA       | 5,000   | -   | 5,000   | 273   | 2,573   | 228   | 2,275                       | 2,275        | 712   | 712  | 1,146   | 38           | 1,184   | -  | -   | -   | -      | -                                   | 6  |                  |         |
| OHIO               | 13,628  | 63  | 13,691  | 338   | 7,159   | 111   | 6,848                       | 6,848        | 3,999   | 3,999  | 368   | 4,367        | -   | -  | -   | -   | -      | -                                   | 1,000                                    |                  |         |
| OKLAHOMA           | 1,660   | 5   | 1,665   | 43  | 1,425   | 36  | 1,389                       | 1,389        | 1,389   | 1,389  | -   | 1,389        | -   | -  | -   | -   | -      | -                                   | -  |                  |         |
| OREGON             | 16,012  | 34  | 16,046  | 84  | 6,411   | 84  | 6,327                       | 6,327        | 3,999   | 3,999  | 117   | 4,116        | -   | -  | -   | -   | -      | -                                   | -  |                  |         |
| NEW JERSEY         | 70,640  | -690  | 69,950  | 2,077   | 10,966  | 966   | 7,482                       | 7,482        | 19,014  | 8,160  | 1,725   | 9,885        | 528   | -  | 3,999   | 1,199   | 504    | 10,946                              | -  |                  |         |
| NEW MEXICO         | 5,910   | 203   | 6,113   | 368   | 1,167   | 81  | 1,086                       | 1,086        | 2,256   | 2,256  | -   | 2,256        | -   | -  | 999   | -   | -      | -                                   | 999                                      |                  |         |
| NEW YORK           | 113,319   | 127   | 113,446   | 2,111   | 20,276  | 10  | 20,266                      | 20,266       | 10,172  | 10,172   | 6,008   | 20,811       | 5,400   | -  | 10,560  | -   | -      | -                                   | 20,811                                   |                  |         |
| NORTH CAROLINA     | 31,712  | 37  | 31,675  | 963   | 30,712  | 86  | 4,785                       | 4,785        | 3,000   | 5,000  | 1,161   | 6,161        | -   | -  | 883   | -   | -      | -                                   | 66                                       |                  |         |
| NORTH DAKOTA       | 2,508   | 114   | 2,622   | 552   | 1,778   | 16  | 1,762                       | 1,762        | 5,255   | 5,255  | -   | 5,255        | -   | -  | 13  | -   | -      | -                                   | 13                                       |                  |         |
| OUTH CAROLINA      | 17,449  | -383  | 17,066  | 3,142   | 7,015   | 529   | 6,486                       | 6,486        | 19,840  | 11,627   | -   | 31,467       | -   | -  | 11,054  | 300   | 18,864 | -                                   | -  |                  |         |
| OKLAHOMA           | 29,113  | -48   | 29,161  | 1,208   | 12,123  | 80  | 12,043                      | 12,043       | 12,533  | 6,471  | 673   | 17,148       | -   | -  | -   | -   | -      | -                                   | 3,609                                    |                  |         |
| OREGON             | 17,449  | -383  | 17,066  | 3,142   | 7,015   | 529   | 6,486                       | 6,486        | 19,840  | 11,627   | -   | 31,467       | -   | -  | 11,054  | 300   | 18,864 | -                                   | -  |                  |         |
| PENNSYLVANIA       | 66,367  | -1,724  | 64,643  | 793   | 35,967  | 5,995   | 2,935                       | 2,935        | 56,927  | 11,708   | 23  | 7,148        | 117   | -  | 18,958  | -   | 382    | 13,960                              | -  |                  |         |
| RHODE ISLAND 12/   | 6,293   | 69  | 6,362   | 304   | 1,991   | 187   | 1,804                       | 1,804        | 276   | 2,080  | -   | 2,080        | -   | -  | 3,609   | -   | -      | -                                   | 3,609                                    |                  |         |
| SOUTH CAROLINA 12/ | 13,245  | 72  | 13,317  | 479   | 3,838   | 36  | 3,802                       | 3,802        | 10,067  | 1,067  | 27  | 1,094        | 89  | -  | 190   | -   | -      | -                                   | 1,094                                    |                  |         |
| SOUTH DAKOTA       | 8,544   | -   | 8,544   | 637   | 4,171   | 8   | 4,163                       | 4,163        | 4,163   | 4,163  | -   | 4,163        | -   | -  | 77  | 104   | -      | -                                   | 77                                       |                  |         |
| TENNESSEE          | 29,602  | 80  | 29,682  | 663   | 5,974   | 367   | 7,038                       | 7,038        | 1,991   | 6,969  | 15,310  | 5,255        | -   | 5,255  | -   | 1,000   | 77     | 2,088                               | 13,960                                   |                  |         |
| TEXAS              | 63,116  | -141  | 62,975  | 6,179   | 46,363  | 679   | 45,684                      | 45,684       | 10,475  | 10,475   | 31,712  | 5,255        | -   | 5,255  | -   | -   | -      | -                                   | 10,475                                   |                  |         |
| VERMONT            | 8,995   | 99  | 9,094   | 96  | 8,999   | 107   | 8,892                       | 8,892        | 563   | 3,969  | 1,985   | 5,954        | 10  | -  | 1,985   | -   | -      | -                                   | 5,954                                    |                  |         |
| VIRGINIA           | 29,602  | -65   | 29,537  | 657   | 3,469   | 60  | 3,409                       | 3,409        | 27,872  | 6,409  | 135   | 6,544        | -   | -  | 39  | -   | -      | -                                   | 6,544                                    |                  |         |
| WASHINGTON         | 16,846  | -   | 16,846  | 986   | 6,800   | 120   | 6,680                       | 6,680        | 9,172   | 9,172  | 10,168  | 1,673        | 10,168  | -  | 7,994   | -   | -      | -                                   | 10,168                                   |                  |         |
| WEST VIRGINIA      | 16,374  | 7   | 16,381  | 221   | 3,700   | 36  | 3,664                       | 3,664        | 1,600   | 1,600  | 517   | 2,117        | -   | -  | -   | -   | -      | -                                   | 2,117                                    |                  |         |
| WISCONSIN          | 39,452  | 403   | 39,855  | 1,642   | 15,575  | -   | 3,895                       | 3,895        | 18,888  | 6,911  | 1,118   | 7,999        | 187   | -  | 5,877   | -   | -      | -                                   | 5,877                                    |                  |         |
| WYOMING            | 3,729   | -   | 3,729   | 2,406   | -   | -   | 2,406                       | 2,406        | 478   | 2,933  | -   | 2,933        | -   | -  | 11  | 996   | -      | -                                   | 607                                      |                  |         |
| DIST. OF COL.      | 5,481   | -   | 5,481   | 111   | -   | -   | -                           | -            | -   | -  | -   | -            | -   | -  | -   | -   | -      | -                                   | -  |                  |         |
| TOTAL              | 1,172,205   | -1,895  | 1,170,310   | 54,732  | 888,191   | 25,346  | 108,091                     | 50,296       | 1,783,889   | 675,216  | 272,200   | 10,317       | 5,516   | 385,037  | 7,698   | 3,000   | 69,497 | 10,000                              | 37,643                                   | 5,700            | 157,916 |

[illegible][illegible]

## DIVERSION OF GASOLINE TAXES AND REGISTRATION FEES, 1934-1938

Source: American Road Builders' Association

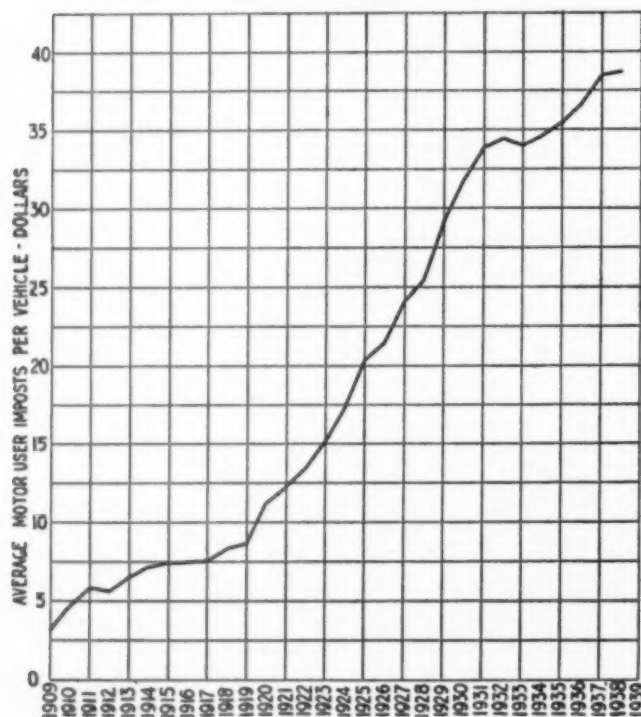


| State   | Retail price of gasoline as of May 1, 1937 | Distribution of cost           |                |         |       |                      | Distribution of one dollar paid for gasoline |           |             |                                     | Distribution of State tax according to purposes for which receipts are allocated 1 |   |              |              |       |                             |                                       |                          |  |               |                    |       |
|---------|--|--------------------------------|----------------|---------|-------|----------------------|--|-----------|-------------|-------------------------------------|--|---|--------------|--------------|-------|-----------------------------|---------------------------------------|--------------------------|--|---------------|--------------------|-------|
|         |  | Net gasoline price without tax | Gasoline taxes |         |       |                      | Net price of gasoline                        | Total tax |             |                                     | For collection and administration  | For State highways                            |              |              |       | For local roads and streets | For State park and forest roads, etc. | For non highway purposes |  |               |                    |       |
|         |  |                                | Total          | Federal | State | State inspection fee |  | Total tax | Federal tax | State tax, including inspection fee |  | Construction, maintenance, and administration | State police | Debt service | Total |                             |                                       | To general funds         | For relief of unemployment and destitution | For education | For other purposes | Total |
|         |  |                                |                |         |       |                      |  |           |             |                                     |  |   |              |              |       |                             |                                       |                          |  |               |                    |       |
| Cts.    | Cts.                                       | Cts.                           | Cts.           | Cts.    | Cts.  | Cts.                 | Cts.   | Cts.      | Cts.        | Cts.                                | Cts.   | Cts.  | Cts.         | Cts.         | Cts.  | Cts.                        | Cts.                                  | Cts.                     | Cts.                                       | Cts.          | Cts.               |       |
| Ala.    | 21.0                                       | 13.98                          | 7.02           | 1       | 6     | 0.02                 | 66.57  | 33.43     | 4.76        | 28.67                               | 0.25   | 10.69   |              | 3.09         | 14.38 | 14.04                       |                                       |                          |  |               |                    |       |
| Ariz.   | 22.0                                       | 16.00                          | 6.00           | 1       | 5     |                      | 72.72  | 27.28     | 4.55        | 22.73                               | .38  | 14.98   | 0.54         |              | 15.52 | 6.79                        |                                       |                          |  | 0.04          | 0.04               |       |
| Ark.    | 21.5                                       | 13.80                          | 7.70           | 1       | 6.5   | .20                  | 64.19  | 35.81     | 4.65        | 31.16                               | 1.16   | 7.75  |              | 19.77        | 27.52 | 2.22                        |                                       | 0.26                     |  |               | .26                |       |
| Calif.  | 18.5                                       | 14.50                          | 4.00           | 1       | 3     |                      | 78.38  | 21.62     | 5.40        | 16.22                               | .05  | 10.78   |              |              | 10.78 | 5.39                        |                                       |                          |  |               |                    |       |
| Colo.   | 22.0                                       | 17.00                          | 5.00           | 1       | 4     |                      | 77.27  | 22.73     | 4.56        | 18.18                               | .27  | 12.61   | .48          |              | 13.09 | 4.82                        |                                       |                          |  |               |                    |       |
| Conn.   | 18.5                                       | 14.50                          | 4.00           | 1       | 3     |                      | 78.38  | 21.62     | 5.40        | 16.22                               | .10  | 14.86   |              | 1.26         | 16.12 |                             |                                       |                          |  |               |                    |       |
| Del.    | 17.5                                       | 12.50                          | 5.00           | 1       | 4     |                      | 71.43  | 28.57     | 5.71        | 22.86                               | .14  | 15.98   | 1.47         | 5.27         | 22.72 |                             |                                       |                          |  |               |                    |       |
| Fla.    | 21.5                                       | 13.38                          | 8.12           | 1       | 7     | .12                  | 62.23  | 37.77     | 4.65        | 33.12                               | .62  | 13.64   | .24          | 4.04         | 17.55 | 4.39                        |                                       | 4.64                     |  | .04           | 4.68               |       |
| Ga.     | 22.0                                       | 15.00                          | 7.00           | 1       | 6     |                      | 68.18  | 31.82     | 4.55        | 27.27                               | .81  | 13.80   |              | 3.75         | 19.54 |                             |                                       |                          |  | 4.52          | 4.52               |       |
| Idaho   | 25.5                                       | 19.50                          | 6.00           | 1       | 5     |                      | 78.79  | 21.21     | 5.26        | 15.95                               | .21  | 5.23  |              | 7.91         | 10.95 |                             |                                       | .05                      | 2.08                                       | 1.27          | 3.40               |       |
| Ill.    | 19.0                                       | 14.97                          | 4.03           | 1       | 3     | .03                  | 78.79  | 21.21     | 5.26        | 15.95                               | .21  | 7.91  |              | 7.91         | 10.95 |                             | .41                                   |                          |  |               | .41                |       |
| Ind.    | 18.4                                       | 14.40                          | 4.00           | 1       | 3     |                      | 78.26  | 21.74     | 5.43        | 16.31                               | .14  | 4.64  |              | 4.34         | 8.98  | 7.19                        |                                       |                          |  |               |                    |       |
| Iowa    | 17.5                                       | 13.48                          | 4.02           | 1       | 3     | .02                  | 77.03  | 22.97     | 5.71        | 17.26                               | .76  | 10.75   | .02          | 1.25         | 12.02 | 4.48                        |                                       |                          |  |               |                    |       |
| Kans.   | 20.5                                       | 14.50                          | 6.00           | 1       | 5     |                      | 70.73  | 29.27     | 4.88        | 24.39                               | .07  | 24.12   | .11          |              | 24.23 | .09                         |                                       |                          |  |               |                    |       |
| La.     | 21.5                                       | 13.47                          | 8.03           | 1       | 7     | .03                  | 62.65  | 37.35     | 4.65        | 32.70                               | .23  |   |              | 18.49        | 18.49 |                             |                                       | 9.34                     | 2.32                                       | 2.32          | 13.98              |       |
| Maine   | 19.3                                       | 14.30                          | 5.00           | 1       | 4     |                      | 74.09  | 25.91     | 5.18        | 20.73                               | .06  | 12.51   | .50          | 5.56         | 18.66 | 2.01                        |                                       |                          |  |               | .03                |       |
| Md.     | 18.0                                       | 13.00                          | 5.00           | 1       | 4     |                      | 72.22  | 27.78     | 5.56        | 22.22                               | .09  | 7.74  |              | 3.82         | 11.56 | 10.54                       |                                       |                          |  |               | .03                |       |
| Mass.   | 16.7                                       | 12.70                          | 4.00           | 1       | 3     |                      | 76.05  | 23.95     | 5.99        | 17.96                               | .05  | 7.21  | .25          | 1.28         | 8.74  | 3.15                        | 0.73                                  | 3.55                     | 1.74                                       |               | 5.29               |       |
| Mich.   | 18.0                                       | 14.0                           | 4.00           | 1       | 3     |                      | 77.77  | 22.23     | 5.36        | 16.67                               | .09  | 9.89  |              | 2.42         | 12.31 | 4.27                        |                                       |                          |  |               | .11                |       |
| Minn.   | 20.1                                       | 15.06                          | 5.04           | 1       | 4     | .04                  | 74.92  | 25.08     | 4.98        | 20.10                               | .15  | 13.93   | .26          | 6.31         | 15.58 | 11.86                       |                                       | .11                      |  |               | .11                |       |
| Miss.   | 21.5                                       | 14.50                          | 7.00           | 1       | 6     |                      | 67.44  | 32.56     | 4.65        | 27.91                               | .41  | 9.18  | .09          |              | 9.18  |                             |                                       |                          |  |               |                    |       |
| Mo.     | 18.3                                       | 15.27                          | 3.03           | 1       | 2     | .03                  | 83.44  | 16.56     | 5.46        | 11.10                               | .10  | 6.74  | .15          | 4.04         | 10.93 |                             |                                       | .07                      |  |               | .07                |       |
| Mont.   | 24.0                                       | 18.00                          | 6.00           | 1       | 5     |                      | 75.00  | 25.00     | 4.17        | 20.83                               | .10  | 20.08   |              | .65          | 20.73 |                             |                                       |                          |  |               |                    |       |
| Nebr.   | 21.0                                       | 14.97                          | 6.03           | 1       | 5     | .03                  | 71.28  | 28.72     | 4.76        | 23.96                               | .22  | 11.87   |              |              | 11.87 | 7.12                        |                                       | 4.75                     |  |               | 4.75               |       |
| Nev.    | 21.0                                       | 16.00                          | 5.00           | 1       | 4     |                      | 76.19  | 23.81     | 4.76        | 19.05                               | .06  | 18.41   | .34          | .24          | 18.99 |                             |                                       |                          |  |               |                    |       |
| N. H.   | 20.3                                       | 15.30                          | 5.00           | 1       | 4     |                      | 75.37  | 24.63     | 4.93        | 19.70                               | .11  | 13.04   |              | 4.96         | 18.00 | 1.70                        |                                       |                          |  |               |                    |       |
| N. J.   | 16.0                                       | 12.00                          | 4.00           | 1       | 3     |                      | 75.00  | 25.00     | 4.17        | 20.83                               | .10  | 1.87  |              | 6.97         | 8.84  | 3.16                        | .02                                   |                          | 4.92                                       | 1.17          | .63                | 6.62  |
| N. Mex. | 21.5                                       | 15.50                          | 6.00           | 1       | 5     |                      | 72.09  | 27.91     | 4.65        | 23.26                               | .51  | 12.00   |              | 10.75        | 22.75 |                             |                                       |                          |  |               |                    |       |
| N. Y.   | 17.0                                       | 12.00                          | 5.00           | 1       | 4     |                      | 70.59  | 29.41     | 5.88        | 23.53                               | .03  | 1.88  | .20          | 1.31         | 3.39  | 2.75                        |                                       | 17.36                    |  |               | 17.36              |       |
| N. C.   | 22.4                                       | 15.15                          | 7.25           | 1       | 6     | .25                  | 67.63  | 32.37     | 4.46        | 27.91                               | .04  | 6.62  | .27          | 9.39         | 16.28 | 8.88                        |                                       | 2.71                     |  |               | 2.71               |       |
| N. Dak. | 20.0                                       | 15.95                          | 4.05           | 1       | 3     | .05                  | 79.75  | 20.25     | 5.00        | 15.25                               | .36  | 9.66  | .16          |              | 9.82  | 4.91                        |                                       | .16                      |  |               | .16                |       |
| Ohio    | 19.5                                       | 14.50                          | 5.00           | 1       | 4     |                      | 74.38  | 25.62     | 5.13        | 20.51                               | .09  | 8.20  | .16          |              | 8.36  | 6.59                        |                                       |                          | 5.47                                       |               | 5.47               |       |
| Okla.   | 19.0                                       | 14.00                          | 5.00           | 1       | 4     |                      | 73.68  | 26.32     | 5.26        | 21.06                               | .42  | 9.25  |              | 9.25         | 5.17  |                             | .01                                   |                          |  | 6.21          | 6.22               |       |
| Oreg.   | 21.0                                       | 15.00                          | 6.00           | 1       | 5     |                      | 71.43  | 28.57     | 4.76        | 23.81                               | .09  | 10.06   | .55          | 7.75         | 18.35 | 4.76                        | .15                                   | .46                      |  |               | .46                |       |
| Pa.     | 17.0                                       | 12.00                          | 5.00           | 1       | 4     |                      | 70.59  | 29.41     | 5.88        | 23.53                               | .14  | 11.12   | .45          | 1.48         | 13.05 | 3.79                        | .03                                   |                          | 6.43                                       |               | .09                |       |
| R. I.   | 15.5                                       | 11.50                          | 4.00           | 1       | 3     |                      | 74.19  | 25.81     | 4.45        | 19.36                               | .08  | 5.89  | .48          |              | 5.89  |                             |                                       |                          |  |               | 6.52               |       |
| S. C.   | 21.0                                       | 13.88                          | 7.12           | 1       | 6     | .12                  | 66.09  | 33.91     | 4.78        | 29.15                               | .16  | 5.65  |              | 18.15        | 23.80 | 4.76                        |                                       | 10.02                    | 2.02                                       |               | 12.04              |       |
| S. Dak. | 20.2                                       | 15.10                          | 5.10           | 1       | 4     | .10                  | 74.75  | 25.25     | 4.95        | 20.30                               | .80  | 9.15  |              | 9.16         |       |                             |                                       | .44                      |  |               | 10.34              |       |
| Tenn.   | 21.5                                       | 13.10                          | 8.40           | 1       | 7     | .40                  | 60.93  | 39.07     | 4.65        | 34.42                               | .52  | 3.90  |              | 13.91        | 17.81 | 9.23                        |                                       |                          |  |               | 6.86               |       |
| Tex.    | 19.0                                       | 14.00                          | 5.00           | 1       | 4     |                      | 73.68  | 26.32     | 5.26        | 21.06                               | .31  | 10.37   |              | 5.19         | 15.56 |                             |                                       |                          | 5.19                                       |               | 5.19               |       |
| Utah    | 24.0                                       | 19.00                          | 5.00           | 1       | 4     |                      | 79.17  | 20.83     | 4.17        | 16.66                               | .06  | 15.82   | .78          |              | 16.60 |                             |                                       |                          |  |               | .01                |       |
| Vt.     | 19.4                                       | 14.40                          | 5.00           | 1       | 4     |                      | 74.23  | 25.77     | 5.13        | 20.62                               | .03  | 11.06   |              | 3.18         | 14.24 | 6.35                        |                                       |                          |  |               | 1.37               |       |
| Va.     | 22.4                                       | 16.40                          | 6.00           | 1       | 5     |                      | 73.21  | 26.79     | 4.48        | 22.33                               | .04  | 12.10   |              | .84          | 12.94 | 9.34                        |                                       |                          |  |               | .01                |       |
| Wash.   | 24.0                                       | 18.00                          | 6.00           | 1       | 5     |                      | 75.00  | 25.00     | 4.17        | 20.83                               | .04  | 5.40  |              | .16          | 5.56  | 13.86                       |                                       |                          | 1.37                                       |               | 1.37               |       |
| W. Va.  | 19.8                                       | 13.80                          | 6.00           | 1       | 5     |                      | 69.70  | 30.30     | 5.05        | 25.25                               | .04  | 5.52  |              | 15.70        | 21.22 | 3.99                        |                                       |                          |  |               | .01                |       |
| Wis.    | 20.8                                       | 15.76                          | 5.04           | 1       | 4     | .04                  | 75.77  | 24.23     | 4.81        | 19.42                               | .30  | 7.81  |              | 2.74         | 10.55 | 6.01                        | .09                                   | 2.47                     |  |               | 2.47               |       |
| Wyo.    | 23.0                                       | 18.00                          | 5.00           | 1       | 4     |                      | 78.26  | 21.74     | 4.38        | 17.30                               | .09  | 11.80   |              | .28          | .88   | 12.98                       | 4.34                                  |                          |  |               | .68                |       |
| D. C.   | 16.0                                       | 12.00                          | 4.00           | 1       | 3     |                      | 81.25  | 18.75     | 8.25        | 12.60                               |  |   |              |              |       | 12.45                       |                                       | .05                      |  |               |                    |       |

Note: Distribution Shown is Based on the Reported Allocations of Gasoline Tax Revenues During the Calendar Year 1936. In Cases Where the Rate of Tax Was Changed During 1936 or 1937, Adjustments Have Been Made to Approximate the Distribution in 1937.

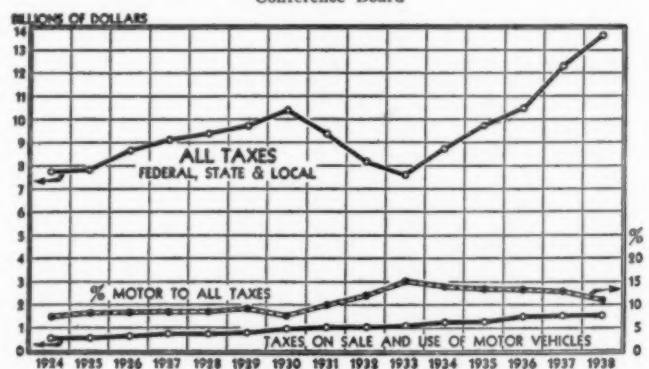
### AVERAGE MOTOR VEHICLE USER IMPOSTS

Source: Public Roads Administration Data



### RELATION MOTOR TAXES TO ALL TAXES

Source: Automobile Manufacturers' Association  
Estimate of All Federal, State, and Local Taxes From National Industrial Conference Board



### HIGHWAY AND GRADE CROSSING FUNDS DURING CALENDAR YEAR, 1939

Source: Hearings on H. R. 7891—76th Congress

| Funds                           | Approved for construction | Contracts awarded | Placed under construction | Completed     |
|---------------------------------|---------------------------|-------------------|---------------------------|---------------|
| Federal-aid highway.....        | \$97,544,027              | \$93,546,107      | \$94,469,211              | \$109,472,951 |
| Federal-aid secondary.....      | 17,140,291                | 17,181,082        | 17,501,023                | 18,927,705    |
| Federal-aid grade crossing..... | 33,346,413                | 34,828,796        | 34,110,756                | 28,914,770    |
| Emergency funds.....            | 2,309,422                 | 2,249,472         | 3,170,230                 | 18,830,071    |
| Total Federal funds.....        | 150,340,153               | 147,805,456       | 149,251,220               | 176,145,497   |
| Estimated total cost.....       | 268,485,553               | 261,761,694       | 264,906,202               | 305,765,864   |
| Total miles.....                | 10,289.0                  | 10,079.4          | 10,185.9                  | 11,776.5      |

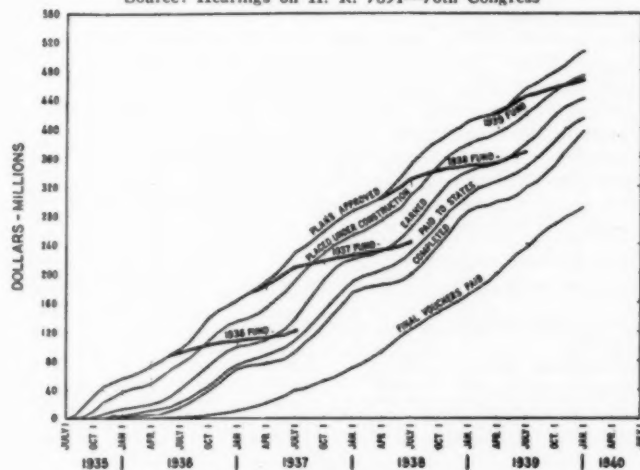
# MOTOR FUEL TAX RATES BY STATES IN CENTS PER GALLON, 1919-1938

Source: Public Roads Administration Data

| STATE                 | 1919 | 1920 | 1921 | 1922 | 1923  | 1924  | 1925  | 1926 | 1927 | 1928 | 1929 | 1930 | 1931  | 1932 | 1933  | 1934  | 1935 | 1936 | 1937 | 1938 |
|-----------------------|------|------|------|------|-------|-------|-------|------|------|------|------|------|-------|------|-------|-------|------|------|------|------|
| ALABAMA               |      |      |      |      | 0-2   | 2     | 2     | 2    | 2-4  | 4    | 4    | 4    | 4-5   | 5-6  | 6     | 6     | 6    | 6    | 6    | 6    |
| ARIZONA               |      |      |      | 1    | 1-3   | 3     | 3     | 3    | 3-4  | 4    | 4    | 4    | 4-5   | 5    | 5-6-5 | 5     | 5    | 5    | 5    | 5    |
| ARKANSAS              |      |      | 1    | 1    | 1-3   | 4     | 4     | 4    | 4-5  | 5    | 5    | 5    | 5-6   | 6    | 6     | 6-6-2 | 6-2  | 6-2  | 6-2  | 6-2  |
| CALIFORNIA            |      |      |      |      | 0-2   | 2     | 2     | 2    | 2-3  | 3    | 3    | 3    | 3     | 3    | 3     | 3     | 3    | 3    | 3    | 3    |
| COLORADO              | 1    | 1    | 1    | 1    | 1-2   | 2     | 2     | 2    | 2-3  | 3    | 3-4  | 4    | 4     | 4    | 4     | 4-5-4 | 4    | 4    | 4    | 4    |
| CONNECTICUT           |      |      | 1    | 1    | 1     | 1     | 1-2   | 2    | 2    | 2    | 2    | 2    | 2     | 2    | 2     | 2     | 2-3  | 3    | 3    | 3    |
| DELAWARE              |      |      |      |      | 0-1   | 2     | 2     | 2    | 2-3  | 3    | 3    | 3    | 3     | 3    | 3     | 3     | 3-4  | 4    | 4    | 4    |
| FLORIDA               |      |      | 1    | 1    | 1-3   | 3     | 3-4   | 4    | 4-5  | 5    | 5-6  | 6    | 6-7   | 7    | 7     | 7     | 7    | 7    | 7    | 7    |
| GEORGIA               |      |      | 1    | 1    | 1-3   | 3     | 3     | 3-4  | 4    | 4-5  | 5    | 5-6  | 6     | 6    | 6     | 6     | 6    | 6    | 6    | 6    |
| IDaho                 |      |      |      |      | 0-2   | 2     | 2-3   | 3    | 3-4  | 4    | 4    | 4-5  | 5     | 5    | 5     | 5     | 5    | 5    | 5    | 5    |
| ILLINOIS              |      |      |      |      | 0-2   | 2     | 2-3   | 3    | 3-4  | 4    | 4    | 4-5  | 5     | 5    | 5     | 5     | 5    | 5    | 5    | 5    |
| INDIANA               |      |      |      |      | 0-2   | 2     | 2-3   | 3    | 3-4  | 4    | 4    | 4-5  | 5     | 5    | 5     | 5     | 5    | 5    | 5    | 5    |
| IOWA                  |      |      |      |      | 0-2   | 2     | 2-3   | 3    | 3-4  | 4    | 4    | 4-5  | 5     | 5    | 5     | 5     | 5    | 5    | 5    | 5    |
| KANSAS                |      |      |      |      | 0-2   | 2     | 2-3   | 3    | 3-4  | 4    | 4    | 4-5  | 5     | 5    | 5     | 5     | 5    | 5    | 5    | 5    |
| KENTUCKY              |      | 1    | 1    | 1    | 1     | 1-3   | 3     | 3    | 3    | 3    | 3    | 3    | 3     | 3    | 3     | 3     | 3    | 3    | 3    | 3    |
| LOUISIANA             |      |      |      | 1    | 1     | 1-2   | 2     | 2    | 2    | 2    | 2-4  | 4-5  | 5     | 5    | 5     | 5     | 5    | 5-7  | 7    | 7    |
| MAINE                 |      |      |      |      | 0-1   | 1     | 1     | 1-3  | 3    | 3-4  | 4    | 4    | 4     | 4    | 4     | 4     | 4    | 4    | 4    | 4    |
| MARYLAND              |      |      |      | 1    | 1     | 1     | 1     | 1    | 1    | 1    | 1    | 1    | 1     | 1    | 1     | 1     | 1    | 1    | 1    | 1    |
| MASSACHUSETTS         |      |      |      |      |       |       |       |      |      |      |      |      |       |      |       |       |      |      |      |      |
| MICHIGAN              |      |      |      |      |       |       | 0-2   | 2    | 2-3  | 3    | 3    | 3    | 3     | 3    | 3     | 3     | 3    | 3    | 3    | 3    |
| MINNESOTA             |      |      |      |      |       |       | 0-2   | 2    | 2    | 2    | 2    | 2    | 2     | 2    | 2     | 2     | 2    | 2    | 2    | 2    |
| MISSISSIPPI           |      |      |      | 1    | 1     | 1-3   | 3     | 3    | 3    | 3-4  | 4    | 4    | 4-5   | 5-6  | 6     | 6     | 6    | 6    | 6    | 6    |
| MISSOURI              |      |      |      |      |       |       | 0-2   | 2    | 2    | 2    | 2    | 2    | 2     | 2    | 2     | 2     | 2    | 2    | 2    | 2    |
| MONTANA               |      |      | 1    | 1    | 1-2   | 2     | 2     | 2    | 2    | 2    | 2-3  | 3    | 3     | 3    | 3     | 3     | 3    | 3    | 3    | 3    |
| NEBRASKA              |      |      |      |      |       |       | 0-2   | 2    | 2    | 2    | 2    | 2    | 2     | 2    | 2     | 2     | 2    | 2    | 2    | 2    |
| NEVADA                |      |      |      |      | 0-2   | 2     | 2-4   | 4    | 4    | 4    | 4    | 4    | 4     | 4    | 4     | 4     | 4    | 4    | 4    | 4    |
| NEW HAMPSHIRE         |      |      |      |      | 0-1   | 2     | 2     | 2    | 2-3  | 3    | 3    | 3    | 3     | 3    | 3     | 3     | 3    | 3    | 3    | 3    |
| NEW JERSEY            |      |      |      |      |       |       |       |      |      |      |      |      |       |      |       |       |      |      |      |      |
| NEW MEXICO            |      |      | 1    | 1    | 1     | 1-3   | 3     | 3    | 3-5  | 5    | 5    | 5    | 5     | 5    | 5     | 5     | 5    | 5    | 5    | 5    |
| NEW YORK              |      |      |      |      |       |       |       |      |      |      | 0-2  | 2    | 2     | 2-3  | 3     | 3     | 3-4  | 4-5  | 5-4  | 4    |
| NORTH CAROLINA        |      |      |      |      |       |       |       |      |      |      |      |      |       |      |       |       |      |      |      |      |
| NORTH DAKOTA          | 1    | 1    | 1    | 1    | 1-3   | 3     | 3-4   | 4    | 4    | 4    | 4-5  | 5    | 5-6   | 6    | 6     | 6     | 6    | 6    | 6    | 6    |
| OHIO                  |      |      |      |      |       |       |       |      |      |      |      |      |       |      |       |       |      |      |      |      |
| OKLAHOMA              |      |      |      |      | 0-1   | 1-2-3 | 3     | 3    | 3    | 3    | 3    | 3    | 3     | 3    | 3     | 3     | 3    | 3    | 3    | 3    |
| OREGON                | 1    | 1    | 2    | 2    | 2-3   | 3     | 3     | 3    | 3    | 3    | 3    | 3    | 3     | 3    | 3     | 3     | 3    | 3    | 3    | 3    |
| PENNSYLVANIA          |      |      | 1    | 1    | 1-2   | 2     | 2     | 2    | 2-3  | 3    | 3-4  | 4-5  | 5     | 5    | 5     | 5     | 5-4  | 4    | 4    | 4    |
| RHODE ISLAND          |      |      |      |      |       |       |       |      |      |      |      |      |       |      |       |       |      |      |      |      |
| SOUTH CAROLINA        |      |      |      | 2    | 2-3   | 3     | 3-5   | 5    | 5    | 5    | 5-6  | 6    | 6     | 6    | 6     | 6     | 6    | 6    | 6    | 6    |
| SOUTH DAKOTA          |      |      |      | 1    | 1-2   | 2     | 2-3   | 3    | 3    | 3    | 3    | 3    | 3     | 3    | 3     | 3     | 3    | 3    | 3    | 3    |
| TENNESSEE             |      |      |      |      | 0-2   | 2     | 2-3   | 3    | 3    | 3    | 3-5  | 5    | 5-6-7 | 7    | 7     | 7     | 7    | 7    | 7    | 7    |
| TEXAS                 |      |      |      |      | 0-1   | 1     | 1     | 1    | 1-3  | 3-2  | 2-4  | 4    | 4     | 4    | 4     | 4     | 4    | 4    | 4    | 4    |
| UTAH                  |      |      |      |      | 0-2-3 | 2-3   | 3-4   | 4    | 4    | 4    | 4    | 4    | 4     | 4    | 4     | 4     | 4    | 4    | 4    | 4    |
| VERMONT               |      |      |      |      | 0-1   | 1     | 1-2   | 2    | 2-3  | 3    | 3-4  | 4    | 4     | 4    | 4     | 4     | 4    | 4    | 4    | 4    |
| VIRGINIA              |      |      |      |      | 0-3   | 3     | 3     | 3    | 3    | 3    | 3    | 3    | 3     | 3    | 3     | 3     | 3    | 3    | 3    | 3    |
| WASHINGTON            |      | 1    | 1    | 1    | 1     | 1     | 1     | 1    | 1    | 1    | 1    | 1    | 1     | 1    | 1     | 1     | 1    | 1    | 1    | 1    |
| WEST VIRGINIA         |      |      |      |      | 0-2   | 2     | 2-3   | 3    | 3-4  | 4    | 4    | 4    | 4     | 4    | 4     | 4     | 4    | 4    | 4-5  | 5    |
| WISCONSIN             |      |      |      |      | 0-1   | 1     | 1-2-3 | 2    | 2    | 2    | 2    | 2    | 2     | 2    | 2     | 2     | 2    | 2    | 2    | 2    |
| WYOMING               |      |      |      |      | 0-2   | 2     | 2     | 2    | 2    | 2    | 2    | 2    | 2     | 2    | 2     | 2     | 2    | 2    | 2    | 2    |
| WYOMING DIST. OF COL. |      |      |      |      |       |       |       |      |      |      |      |      |       |      |       |       |      |      |      |      |
| WEIGHTED AVERAGE      | 1.0  | 1.0  | 1.1  | 1.1  | 1.6   | 2.0   | 2.3   | 2.4  | 2.8  | 3.0  | 3.2  | 3.3  | 3.5   | 3.6  | 3.7   | 3.7   | 3.8  | 3.9  | 3.9  | 4.0  |

## STATUS OF FEDERAL AID HIGHWAY FUND

Source: Hearings on H. R. 7891—76th Congress



## STATE MOTOR-VEHICLE RECEIPTS—1939

Source: Public Roads Administration, Issued May 1, 1940

|   |               |
|---|---------------|
| Total Receipts, Registration and Other Fees | \$412,494,000 |
| Motor-Vehicle Registration Fees             |               |
| Total                                       | 342,997,000   |
| Passenger Motor Vehicles:                   |               |
| Total                                       | 236,727,000   |
| Automobiles (including taxicabs)            | 233,637,000   |
| Motor-busses                                | 3,090,000     |
| Motor Trucks, Tractor Trucks, Etc.          | 96,632,000    |
| Registration Fees, Other Vehicles:          |               |
| Trailers and Semi-Trailers                  | 10,118,000    |
| Motorcycles                                 | 418,000       |
| Total Registration Fees, All Vehicles       | 353,533,000   |
| Miscellaneous Receipts                      |               |
| Total                                       | 58,961,000    |
| Dealers' Licenses and Plates                | 2,444,000     |
| Operators' and Chauffeurs' Permits          | 28,443,000    |

|   |           |
|---|-----------|
| Certificate of Title                        | 7,704,000 |
| Special Titling Taxes                       | 2,849,000 |
| Fines and Penalties                         | 2,408,000 |
| Transfer or Registration Fees               | 8,806,000 |
| Other Receipts                              | 4,371,000 |
| Estimated Service Charges, Local Collectors | 2,547,000 |
| Unclassified Refunds                        | - 611,000 |

## EXPENDITURES BY THE FEDERAL GOVERNMENT ON ROADS IN FEDERAL DOMAIN BY CALENDAR YEARS, 1921 TO 1938

Source: From U. S. Bureau of Public Roads in Public Aids to Motor Vehicle Transportation

| Calendar Year | Forest Highways | National Parks and Parkways | Indian Reservations | Public Land Highways | Total       |
|---------------|-----------------|-----------------------------|---------------------|----------------------|-------------|
| 1921          | 4,716,192       | 0                           | 0                   | 0                    | 4,716,192   |
| 1922          | 3,934,012       | 0                           | 0                   | 0                    | 3,934,012   |
| 1923          | 7,296,866       | 0                           | 0                   | 0                    | 7,296,866   |
| 1924          | 7,165,439       | 76,367                      | 0                   | 0                    | 7,239,806   |
| 1925          | 9,454,042       | 424,700                     | 0                   | 0                    | 9,878,742   |
| 1926          | 7,061,608       | 1,387,952                   | 0                   | 0                    | 8,449,560   |
| 1927          | 5,690,126       | 2,309,333                   | 0                   | 0                    | 7,999,459   |
| 1928          | 6,022,132       | 3,582,159                   | 0                   | 0                    | 9,604,291   |
| 1929          | 6,020,159       | 3,037,299                   | 0                   | 0                    | 9,057,458   |
| 1930          | 6,996,535       | 3,150,156                   | 256,000             | 0                    | 10,402,691  |
| 1931          | 14,426,572      | 6,319,500                   | 441,654             | 845,947              | 22,033,673  |
| 1932          | 7,952,393       | 4,984,023                   | 563,969             | 1,790,311            | 15,310,696  |
| 1933          | 11,346,765      | 4,378,677                   | 1,525,535           | 1,865,043            | 19,116,022  |
| 1934          | 14,779,109      | 9,446,265                   | 4,047,505           | 3,946,462            | 32,221,341  |
| 1935          | 10,454,344      | 8,462,682                   | 2,080,000           | 3,111,346            | 24,088,372  |
| 1936          | 7,272,324       | 9,524,406                   | 4,080,000           | 2,218,616            | 23,055,346  |
| 1937          | 8,794,777       | 9,717,410                   | 3,580,000           | 1,616,102            | 23,648,289  |
| 1938          | 7,675,460       | 8,515,632                   | 2,846,256           | 1,766,464            | 20,995,802  |
| Total         | 147,256,555     | 75,310,561                  | 19,250,999          | 17,152,383           | 256,966,598 |

1/ Bureau of Public Roads expenditures only.

2/ Fiscal year expenditures

3/ Minor differences between totals and sums of items result from rounding to nearest dollar.



### HIGHWAY EXPENDITURES PER CAPITA FOR STREETS

In Cities of Over 30,000 Population

Source: Public Aids to Motor Vehicle Transportation

| Year                | Construction<br>1/ | Maintenance<br>and<br>Operating<br>Expenses<br>1/ 2/ | Total   | Price<br>Index<br>(1913=100)<br>3/ | Expenditures<br>Per Capita<br>Adjusted to<br>1913 Basis<br>(4) ÷ (5)<br>100 |
|---------------------|--------------------|--|---------|------------------------------------|---|
| (1)                 | (2)                | (3)  | (4)     | (5)                                | (6)   |
| 1905                | \$ 5.62            | \$ 1.64  | \$ 5.86 | 93.90                              | \$ 5.60   |
| 1907                | 5.28               | 1.91   | 5.17    | 100.55                             | 5.14  |
| 1909                | 5.29               | 1.64   | 4.93    | 90.92                              | 5.42  |
| 1910                | 5.38               | 1.94   | 5.32    | 96.33                              | 5.52  |
| 1911                | 5.79               | 1.60   | 5.67    | 93.43                              | 6.07  |
| 1913                | 5.36               | 1.97   | 5.36    | 100.00                             | 5.36  |
| 1915                | 5.77               | 2.01   | 5.78    | 92.58                              | 6.24  |
| 1916                | 5.13               | 1.87   | 5.00    | 129.58                             | 3.86  |
| 1917                | 5.25               | 1.90   | 5.15    | 121.24                             | 2.84  |
| 1918                | 5.14               | 1.93   | 5.07    | 129.20                             | 2.68  |
| 1919                | 2.41               | 1.98   | 4.39    | 198.42                             | 2.21  |
| 1921                | 3.33               | 2.32   | 5.65    | 201.21                             | 2.80  |
| 1922                | 4.85               | 2.07   | 7.72    | 174.45                             | 4.43  |
| 1923                | 5.22               | 2.07   | 6.09    | 194.41                             | 4.16  |
| 1924                | 6.24               | 2.91   | 9.15    | 186.50                             | 4.91  |
| 1925                | 7.79               | 3.12   | 10.91   | 176.93                             | 6.17  |
| 1926                | 7.94               | 3.42   | 11.56   | 170.51                             | 6.66  |
| 1927                | 9.25               | 3.22   | 12.77   | 168.04                             | 7.60  |
| 1928                | 8.97               | 3.49   | 12.46   | 157.15                             | 7.93  |
| 1929                | 8.57               | 3.65   | 12.22   | 151.87                             | 8.06  |
| 1930                | 9.01               | 3.59   | 12.60   | 141.32                             | 8.92  |
| 1931                | 6.20               | 3.59   | 9.79    | 126.64                             | 7.73  |
| Weighted average: - |                    |  |         |                                    |   |
| 1921-31             |                    |  |         |                                    | 6.69  |
| 1925-31             |                    |  |         |                                    | 7.62  |

1/ From Bureau of the Census, Financial Statistics of Cities having a Population of Over 30,000.

2/ Includes expenditures for roadways, snow and ice removal, and street lighting. Expenditures for "waterways" and "repairs for compensation" were omitted. Street cleaning is not included under "highways" in the census tabulations, but under "sanitation".

3/ B.N.R. Cost Index (1913=100) was used through 1922. Changes in 1922 figure to give the 1923 figure and subsequent yearly fluctuations were computed in accordance with the fluctuations in the Bureau of Public Roads Price Index.

Note: These figures were not carried beyond 1931 because the coordinator's report was interested only in a 1932 status.—Ed.

### REGULAR FEDERAL-AID AND EMERGENCY FEDERAL-AID AND PUBLIC WORKS FUNDS—AUTHORIZATIONS, APPROPRIATIONS, AND EXPENDITURES BY FISCAL YEARS

Source: American Association of State Highway Officials in Hearings on H. R. 7891

| Fiscal Year | Regular Federal Aid |                |                          |
|-------------|---------------------|----------------|--------------------------|
|             | Authorizations      | Appropriations | Expenditures             |
| 1917        | \$5,000,000         | \$5,000,000    | \$34,338                 |
| 1918        | 10,000,000          | 10,000,000     | 574,816                  |
| 1919        | 65,000,000          | 65,000,000     | 2,915,283                |
| 1920        | 95,000,000          | 95,000,000     | 20,340,774               |
| 1921        | 100,000,000         | 100,000,000    | 57,462,768               |
| 1922        | 75,000,000          | 75,000,000     | 89,946,604               |
| 1923        | 50,000,000          | 25,000,000     | 71,604,709               |
| 1924        | 65,000,000          | 29,300,000     | 80,447,824               |
| 1925        | 75,000,000          | 13,000,000     | 97,472,506               |
| 1926        | 75,000,000          | 98,900,000     | 89,362,111               |
| 1927        | 75,000,000          | 75,000,000     | 82,977,566               |
| 1928        | 75,000,000          | 71,000,000     | 82,513,834               |
| 1929        | 75,000,000          | 71,000,000     | 84,006,619               |
| 1930        | 75,000,000          | 105,400,000    | 77,892,192               |
| 1931        | 125,000,000         | 109,000,000    | 135,591,373              |
| 1932        | 125,000,000         | 175,000,000    | 129,805,187              |
| 1933        | 125,000,000         | 100,000,000    | 103,741,125              |
| 1934        |                     | 35,000,000     | 43,469,422               |
| 1935        |                     | 8,000,000      | 13,289,614               |
| 1936        | 125,000,000         | 48,559,256     | 27,188,043               |
| 1937        | 125,000,000         | 60,000,000     | 78,875,136               |
| 1938        | 200,000,000         | 165,000,000    | 142,785,989              |
| 1939        | 200,000,000         | 185,000,000    | 161,011,461              |
| 1940        | 135,000,000         | 190,000,000    | <sup>1</sup> 100,000,000 |
| 1941        | 160,000,000         |                |                          |
| Total       | 2,235,000,000       | 1,914,159,286  | 1,773,309,294            |

### Emergency and Public Works

| Fiscal Year | Authorizations | Appropriations | Expenditures           |
|-------------|----------------|----------------|------------------------|
| 1917        |                |                |                        |
| 1918        |                |                |                        |
| 1919        |                |                |                        |
| 1920        |                |                |                        |
| 1921        |                |                |                        |
| 1922        |                |                |                        |
| 1923        |                |                |                        |
| 1924        |                |                |                        |
| 1925        |                |                |                        |
| 1926        |                |                |                        |
| 1927        |                |                |                        |
| 1928        |                |                |                        |
| 1929        |                |                |                        |
| 1930        |                |                |                        |
| 1931        | \$80,000,000   | \$80,000,000   | \$20,928,066           |
| 1932        |                |                | 58,907,453             |
| 1933        | 120,000,000    | 120,000,000    | 62,131,961             |
| 1934        | 400,000,000    | 400,000,000    | 181,019,392            |
| 1935        | 200,000,000    | 200,000,000    | 264,498,936            |
| 1936        | 400,000,000    | 400,000,000    | 201,593,976            |
| 1937        |                |                | 264,666,020            |
| 1938        |                |                | 81,717,299             |
| 1939        |                |                | 32,661,616             |
| 1940        |                |                | <sup>1</sup> 8,500,000 |
| 1941        |                |                |                        |
| Total       | 1,200,000,000  | 1,200,000,000  | 1,176,624,719          |

<sup>1</sup> Estimated expenditures July 1-Dec. 31, 1939.

### SUMMARY OF VARIED TAXES AND FEES PAID BY MOTOR VEHICLE USERS

Source: Public Roads Administration  
Data as of 1939

#### State fees and taxes

Gasoline taxes (all states).  
Registration fees (all states; computed on a variety of bases).  
Mileage taxes, ton-mile or passenger-mile taxes (22 states; applied to various groups of carriers and computed on different bases).  
Receipts taxes (10 states; varying application and rates).  
Special license taxes, certificate fees, permit fees, etc. (36 states; variously applied and computed).  
Caravan or in transit vehicle taxes or fees (4 or more states).  
Personal property tax (26 states).  
Operators' and chauffeurs' license fees (44 states).  
Fees for certificates of title (24 states).  
Fees for transfers, duplicate plates or reregistrations (49 states including Dist. of Col.).

#### County fees and taxes:\*

Personal property tax or equivalent permit fee (25 to 31 states).

#### Federal excise taxes:

Gasoline.  
Lubricating oils.  
Motor vehicles.  
Tires and tubes.  
Parts and accessories.

Data as of 1932

#### County fees and taxes:\*

Registration fees or wheel taxes (Tennessee—2 counties only).  
Gasoline taxes (Alabama, Louisiana, and Mississippi—54 counties in all).  
Franchise taxes (Louisiana and Nevada—29 counties).  
Other fees and taxes (Mississippi—2 counties only).

#### Municipal fees and taxes:\*

Personal property tax (in 31 states).  
Registration fees or wheel taxes (712 municipalities in 11 states, mainly Illinois and Southern states).  
Gasoline taxes (143 municipalities in 6 states).  
Franchise taxes (828 municipalities in 35 states).  
Other fees (131 municipalities in 21 states).

\* The local data for 1932 were obtained by questionnaire from the states and are the latest compilation of local motor user impost sources. The data relative to county and municipal fees and taxes are incomplete. These charges apply in many instances only to a limited class vehicles.

## STATE ROAD BONDED INDEBTEDNESS

Source: American Association of State Highway Officials

| STATE   | Amount outstanding highway bonds, including county or local bonds assumed by the State - \$1,000. | Date last bond matures | Amount outstanding, bridge bonds (not to be retired by tolls) - \$1,000. | Date last bond matures | Amount outstanding, bridge bonds to be retired by tolls - \$1,000. | Amount outstanding, notes debentures, or other indebtedness - \$1,000. | Date of liquidation | Percent of income received from motor fees and gas tax, etc. |
|---------|---|------------------------|--|------------------------|--|--|---------------------|--|
| Ala.    | 35,802  | 1963                   | 5,145  | 1957                   | 950  | 550  | 1939                | 36   |
| Ariz.   | None  |                        | None   |                        | None   | None   |                     |  |
| Ark.    | 134,396   | 1977                   | 7,155  | 1965                   | None   | 344  | 1954                | 65   |
| Calif.  | 43,425  | 1965                   | None   |                        | 71,000   | None   |                     |  |
| Colo.   | 25,968  | 1954                   |  |                        |  |  |                     | 31   |
| Conn.   | 12,568  | 1952                   | 2,100  | 1946                   | None   | None   |                     | 15   |
| Del.    | 9,275   | 1979                   | None   |                        | None   | None   |                     | 22   |
| Fla.    | 128,852   | 1975                   | None   |                        | 71   | None   |                     |  |
| Ga.     | None  |                        | None   |                        | None   | 16,001   | 1948                |  |
| Ida.    | 312   | 1947                   | None   |                        | None   | None   |                     |  |
| Ill.    | 121,175   | 1959                   | None   |                        | None   | None   |                     | 23   |
| Ind.    | None  |                        | None   |                        | None   | 1,357  | 1939                | 50   |
| Iowa.   | 86,335  | 1953                   |  | 1953                   | Unavail-<br>able   | None   |                     |  |
| Kan.    | 17,165  | 1957                   | None   |                        | None   | 2,780  | 1949                | 9  |
| Ky.     | None  |                        | None   |                        | 9,819  | None   |                     |  |
| La.     | 91,556  | 1962                   | 11,600   | 1962                   | None   | 3,354  | 1939                | 50   |
| Me.     | 28,432  | 1978                   |  |                        | 2,975  | None   |                     |  |
| Md.     | 8,215   | 1945                   | 2,440  | 1947                   | 6,000  | 6,069  | 1950                | 3  |
| Mass.   | 23,000  | 1946                   | None   |                        | None   | None   |                     | 30   |
| Mich.   | 47,419  | 1944                   | None   |                        | None   | None   |                     | 16   |
| Minn.   | 47,958  | 1952                   |  |                        | None   | 43   | 1940                | 21   |
| Miss.   | 36,000  | 1958                   | None   |                        | None   | 300  | 1940                | 30   |
| Mo.     | 94,990  | 1957                   | None   |                        | None   | None   |                     | 40   |
| Mont.   | None  |                        | None   |                        | None   | 4,500  | 1949                | 16   |
| Nebr.   | None  |                        | None   |                        | None   | None   |                     |  |
| Nev.    | 158   | 1941                   | None   |                        | None   | None   |                     | 5  |
| N.Hamp. | 7,970   | 1949                   | None   |                        | 1,405  | None   |                     | 25   |
| N.J.    | 97,870  | 1974                   |  |                        | None   | 23,100   |                     | 35   |
| N.Mex.  | 1,280   | 1951                   | None   |                        | None   | None   |                     |  |
| N.Y.    | 194,530   | 1987                   | None   |                        | 7,976  | None   |                     |  |
| N.Car.  | 78,071  | 1964                   | 1,275  | 1954                   | None   | 709  | 1945                | 28   |
| N.Dak.  | None  |                        | None   |                        | None   | 600  | 1939                | 4  |
| Ohio    | None  |                        | None   |                        | 5,238  | None   |                     |  |
| Okla.   | None  |                        | None   |                        | None   | None   |                     |  |
| Ore.    | 16,927  |                        |  | 1960                   |  |  |                     | 20   |
| Penn.   | 62,942  | 1954                   |  |                        |  |  |                     | 8  |
| R.I.    | 513   | 1942                   | 4,574  | 1977                   | None   | None   |                     |  |
| S.Car.  | 59,576  | 1955                   |  |                        | None   | None   |                     | 55   |
| S.Dak.  | None  |                        | None   |                        | None   | None   |                     |  |
| Tenn.   | 44,871  | 1958                   | 13,212   | 1948                   | None   | 52,133   | 1967                |  |
| Tex.    | 89,003  | 1973                   |  |                        | None   | None   |                     | 5  |
| Utah    | 1,000   | 1941                   | None   |                        | None   | None   |                     | 12   |
| Vt.     | 4,039   | 1943                   | None   |                        | None   | None   |                     | 2  |
| Va.     | 3,428   | 1947                   | None   |                        | None   | None   |                     | 7  |
| Wash.   | None  |                        | 385  | 1956                   |  | 7,961  | 1952                |  |
| W.Va.   | 76,212  |                        | None   |                        | 2,638  | None   |                     | 60   |
| Wis.    | 21,786  | 1950                   | None   |                        | None   | None   |                     | 12   |
| Wyo.    | 2,885   | 1950                   | None   |                        | None   | None   |                     | 8  |
| Total   | 1,755,704   |                        | 47,886   |                        | 108,072  | 119,801  |                     |  |

- All figures based on fiscal year ended Sept. 30, 1938.
- Includes outstanding bridge bonds not to be retired by tolls.
- Florida has no bonded indebtedness either direct or assumed. The above figures refer to county and special district bonds. These figures are as of Sept. 30, 1938.
- Secondary road and bridge bonds unavailable in separate statement. No toll-bridge bonds issued by counties.
- Secondary roads only—as of Dec. 1, 1938.
- As of June 30, 1939.
- Cost of interest and retirement of those outstanding obligations of the State is paid out of tax levy funds of State and not from road income.
- Figured on gas tax only. Motor-vehicle fees not State highway department income.
- Outstanding bridge bonds not to be retired by tolls included.
- Amount to be paid this year from general funds, for retirement of bonds and interest (does not include bridge bonds to be retired by tolls) Highways \$4,360,000; grade-crossing eliminations \$5,245,337.50.
- This refers to State and not counties or cities.
- In Rhode Island all revenue from motor fees and gas tax are paid into the general fund of the State (approximate amount \$6,700,000). The legislature appropriates a definite amount yearly for highways and bridges from the general fund (amount \$1,985,000 for fiscal year June 30, 1940). The carrying charges on outstanding road and bridge bonds (approximately \$75,000) are paid from the general fund.

- No State road bonds issued. Participation in county and road district bonds assumed. As of Dec. 31, 1938.
- Proceeds of 1 cent of 4 cents State gas tax diverted in 1932 to pay State participation in bonds.
- Continuously reissuing bonds of revolving authorization.

## STATE MOTOR-FUEL TAX RECEIPTS—1939

Source: Public Roads Administration, Issued May 1, 1940

|   |               |
|---|---------------|
| Tax Rate Per Gallon on Dec. 31                    | \$0.0396      |
| Receipts from Taxation of Motor Fuel:             |               |
| Gross tax collections                             | \$868,312,000 |
| Deductions by distributors for expenses           | 3,833,000     |
| Gross receipts by state                           | 864,479,000   |
| Refunds paid                                      | 48,046,000    |
| Net receipts by state                             | 816,433,000   |
| Other Receipts in Connection with Motor Fuel Tax: |               |
| Distributors' and dealers' licenses               | 411,000       |
| Inspection fees                                   | 4,947,000     |
| Fines and Penalties                               | 33,000        |
| Miscellaneous receipts                            | 189,000       |
| Total   | 5,580,000     |
| Net Total Receipts                                | 822,013,000   |
| Less Tax on Aviation Gasoline                     | 357,000       |
| Adjusted Net Total Receipts                       | 821,656,000   |

## PRINCIPAL MOTOR USER IMPOSTS IN THE UNITED STATES

Source: National Safety Council; Accident Facts 1940 Edition

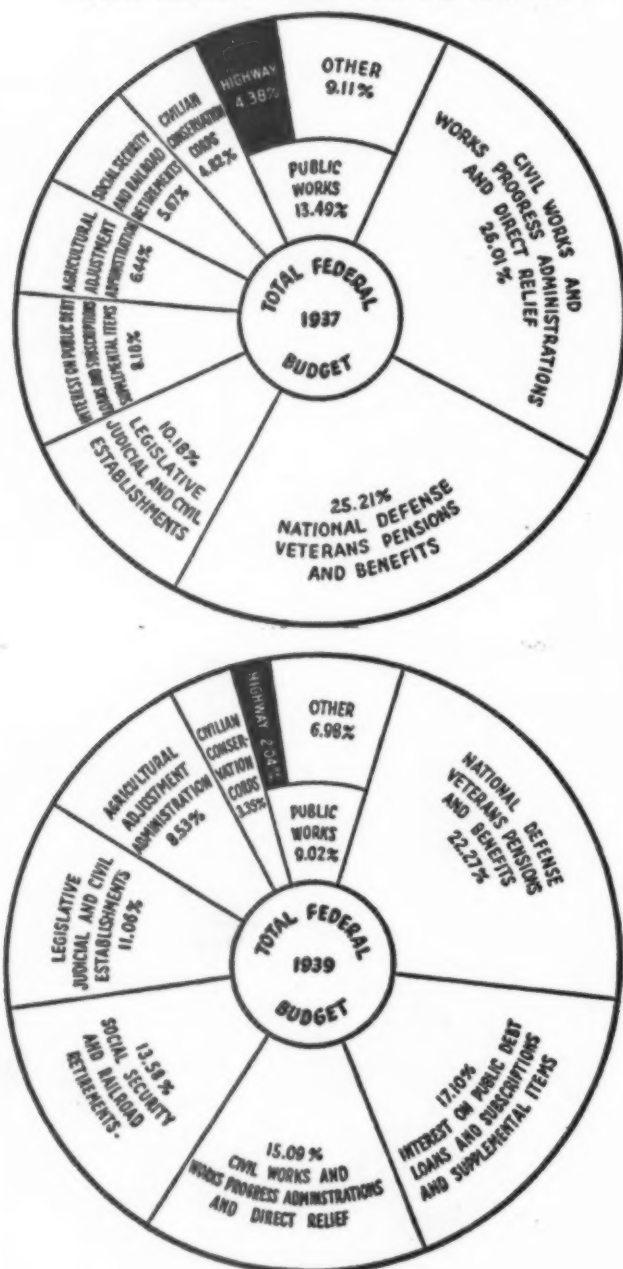
| Year    | Registration | Registration Fees | Motor Fuel Tax | Total Receipts | Average Per Vehicle |
|---------|--------------|-------------------|----------------|----------------|---------------------|
| 1895    | 4            |                   |                |                |                     |
| 1896    | 16           |                   |                |                |                     |
| 1897    | 90           |                   |                |                |                     |
| 1898    | 800          |                   |                |                |                     |
| 1899    | 3,200        |                   |                |                |                     |
| 1900    | 7,800        |                   |                |                |                     |
| 1901    | 14,800       | 1/ 954            |                |                |                     |
| 1902    | 23,000       |                   | 1,082          |                |                     |
| 1903    | 32,920       |                   | 26,865         |                |                     |
| 1904    | 55,000       |                   | 33,411         |                |                     |
| 1905    | 78,000       |                   | 62,509         |                |                     |
| 1906    | 107,000      |                   | 192,706        |                |                     |
| 1907    | 142,000      |                   | 335,684        |                |                     |
| 2/ 1908 | 197,500      |                   | 486,380        |                |                     |
| 3/ 1909 | 312,000      |                   | 942,675        | 942,675        | 3.80                |
| 1910    | 468,500      | 2,234,913         |                | 2,234,913      | 4.70                |
| 1911    | 639,500      | 3,967,475         |                | 3,967,475      | 5.85                |
| 1912    | 944,000      | 5,661,043         |                | 5,661,043      | 5.60                |
| 1913    | 1,258,062    | 8,192,253         |                | 8,192,253      | 6.50                |
| 1914    | 1,711,339    | 12,382,031        |                | 12,382,031     | 7.80                |
| 1915    | 2,445,666    | 18,245,711        |                | 18,245,711     | 7.45                |
| 1916    | 3,512,996    | 25,865,369        |                | 25,865,369     | 7.35                |
| 1917    | 4,983,340    | 37,501,233        |                | 37,501,233     | 7.55                |
| 1918    | 6,146,617    | 51,477,419        |                | 51,477,419     | 8.35                |
| 1919    | 7,565,646    | 64,697,255(4)     | 1,022,514      | 65,719,769     | 8.69                |
| 1920    | 9,231,941    | 102,546,212(5)    | 1,363,902      | 103,910,114    | 11.26               |
| 1921    | 10,463,295   | 122,478,654(15)   | 5,382,111      | 127,860,765    | 12.22               |
| 1922    | 12,238,375   | 152,047,824(19)   | 12,703,066     | 164,750,912    | 13.46               |
| 1923    | 15,092,177   | 189,970,992(35)   | 36,566,338     | 227,537,350    | 15.08               |
| 1924    | 17,638,663   | 225,492,252(35)   | 80,442,295     | 305,934,547    | 17.34               |
| 1925    | 20,034,203   | 260,619,621(44)   | 146,358,087    | 406,977,708    | 20.41               |
| 1926    | 22,137,334   | 288,282,352(44)   | 187,603,231    | 475,885,563    | 21.50               |
| 1927    | 23,268,109   | 301,061,132(46)   | 256,838,613    | 559,899,945    | 24.06               |
| 1928    | 24,629,921   | 322,630,085(46)   | 304,871,766    | 627,501,791    | 25.48               |
| 1929    | 26,653,450   | 347,843,543(48)   | 431,311,519    | 779,155,062    | 29.23               |
| 1930    | 28,718,900   | 355,704,860(48)   | 493,665,117    | 849,569,977    | 31.80               |
| 1931    | 29,986,353   | 344,337,654(48)   | 536,397,458    | 890,738,112    | 33.09               |
| 1932    | 24,295,270   | 324,273,510(48)   | 513,047,239    | 837,320,749    | 34.46               |
| 1933    | 24,103,969   | 301,315,447(48)   | 518,195,712    | 819,511,159    | 34.00               |
| 1934    | 25,223,170   | 307,260,000(48)   | 565,087,000    | 872,287,000    | 34.58               |
| 1935    | 26,514,791   | 322,974,000(48)   | 616,851,671    | 939,825,671    | 35.45               |
| 1936    | 28,522,588   | 359,783,000(48)   | 686,631,000    | 1,046,414,000  | 36.69               |
| 1937    | 30,041,292   | 399,613,000(48)   | 756,930,000    | 1,156,543,000  | 38.50               |
| 1938    | 29,852,910   | 388,825,000(48)   | 766,853,000    | 1,155,678,000  | 38.71               |
| 1939    |              |                   |                |                |                     |

## NOTES

- 1/ New York State only. First State to charge registration fee.
- 2/ Registration for 1908 and prior years from Facts and Figures of the Automobile Manufacturers' Association.
- 3/ License fees limited in application until 1909, hence this is first year in which average fee has any significance.
- 4/ Number of states in which gas tax levied within brackets at left of column. District of Columbia 1924 to date.

### COMPARISON OF FEDERAL ALLOTMENTS FOR HIGHWAYS BETWEEN 1937 AND 1939 FEDERAL BUDGETS

Source: American Association of State Highway Officials



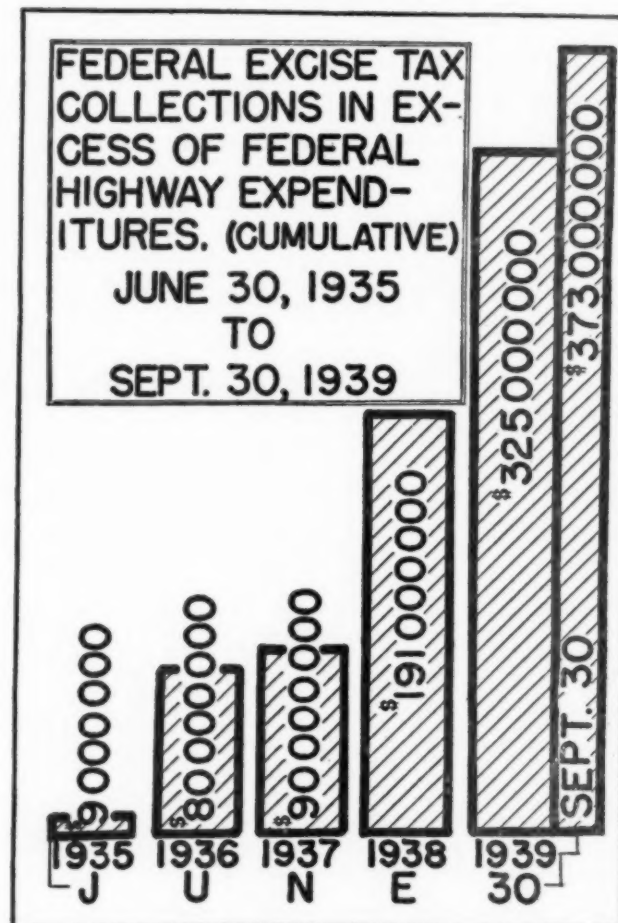
### REGULAR AND EMERGENCY HIGHWAY FUNDS AUTHORIZED BY CONGRESS 1934 TO 1938

Source: Hearings on H. R. 8838—75th Congress

| Funds   | Authorization        | Deduction for administration |
|---|----------------------|------------------------------|
| <b>EMERGENCY FUNDS</b>  |                      |                              |
| 1934 public works highways (act of June 16, 1933)                 | \$400,000,000        | \$4,000,000                  |
| 1934 public lands highways (act of June 16, 1933)                 | 5,000,000            |                              |
| 1935 public works highways (act of June 16, 1934)                 | 300,000,000          | 2,500,000                    |
| 1935 public lands highways (act of June 16, 1934)                 | 2,500,000            |                              |
| Works Program (act of April 8, 1935):                             |                      |                              |
| Highways, roads, and streets                                      | 200,000,000          | 5,000,000                    |
| Grade-crossing eliminations                                       | 200,000,000          | 4,000,000                    |
| <b>Total emergency funds</b>                                      | <b>1,007,500,000</b> | <b>15,000,000</b>            |
| <b>REGULAR FUNDS</b>  |                      |                              |
| 1936 Federal-aid highway system (act of June 16, 1934)            | 125,000,000          | 3,125,000                    |
| 1937 Federal-aid highway system (act of June 16, 1934)            | 125,000,000          | 3,125,000                    |
| 1938 Federal-aid highway system (act of June 16, 1934)            | 125,000,000          | 3,125,000                    |
| 1938 Federal-aid secondary of feeder roads (act of June 16, 1934) | 25,000,000           |                              |
| 1938 grade crossings (act of June 16, 1934)                       | 80,000,000           |                              |
| 1936 public lands highways (act of June 16, 1934)                 | 2,500,000            |                              |
| 1938 public lands highways (act of June 16, 1934)                 | 2,500,000            |                              |
| <b>Total regular funds</b>  | <b>455,000,000</b>   | <b>9,250,000</b>             |
| <b>Grand total</b>  | <b>1,462,500,000</b> | <b>24,250,000</b>            |

### FEDERAL EXCISE TAX COLLECTIONS ON MOTOR VEHICLES, PARTS AND ACCESSORIES IN EXCESS OF FEDERAL HIGHWAY EXPENDITURES

Source: American Road Builders' Association



### MANUFACTURERS' EXCISE TAXES RELATING TO MOTOR VEHICLE COLLECTIONS BY THE FEDERAL GOVERNMENT. FISCAL YEARS 1930-1939

Source: American Association of State Highway Officials in Hearings on H. R. 7891

| Fiscal Year Ended June 30 | Manufacturers' Excise Taxes |                                      |   |  |                                       |   | Total                |
|---------------------------|-----------------------------|--------------------------------------|---|--|---------------------------------------|---|----------------------|
|                           | Gasoline 1 Cent Per Gallon  | Lubricating Oils, 4 Cents Per Gallon | Tires and Inner Tubes 2 1/2 Cents Per Pound | Automobiles and Motor Cycles, 5 Percent On Price | Automobile Trucks, 2 Percent On Price | Auto Parts and Accessories 2 Percent On Price |                      |
| 1930                      |                             |                                      |   |  |                                       |   |                      |
| 1931                      |                             |                                      |   |  |                                       |   |                      |
| 1932                      | \$ 184,989,418              | \$ 16,253,905                        | \$ 14,980,000                               | \$ 18,975,922                                    | \$ 1,654,040                          | \$ 5,897,876                                  | \$ 178,987,660       |
| 1933                      | 208,976,024                 | 20,824,987                           | 27,630,145                                  | 28,526,723                                       | 5,048,435                             | 5,695,713                                     | 296,731,067          |
| 1934                      | 141,828,293                 | 27,800,047                           | 28,637,795                                  | 38,605,336                                       | 6,150,070                             | 6,445,054                                     | 248,507,597          |
| 1935                      | 177,339,587                 | 27,018,051                           | 32,207,962                                  | 40,200,050                                       | 9,000,000                             | 7,110,108                                     | 293,961,723          |
| 1936                      | 198,532,816                 | 31,668,001                           | 40,619,180                                  | 48,264,828                                       | 9,000,873                             | 10,065,700                                    | 335,196,626          |
| 1937                      | 202,648,079                 | 31,648,080                           | 31,567,105                                  | 43,364,828                                       | 6,696,819                             | 7,988,800                                     | 324,830,702          |
| 1938                      | 207,016,748                 | 30,466,634                           | 34,619,807                                  | 42,722,786                                       | 6,007,668                             | 7,935,664                                     | 329,000,501          |
| <b>Total</b>              | <b>1,275,575,969</b>        | <b>189,815,645</b>                   | <b>208,861,579</b>                          | <b>288,657,645</b>                               | <b>61,596,219</b>                     | <b>60,689,077</b>                             | <b>2,045,275,942</b> |

| Fiscal Year Ended June 30 | Estimated Amount of Tax on Lubricating Oils |               |               | Fiscal Year Ended June 30 | Estimated Amount of Tax on Lubricating Oils |                      |               |
|---------------------------|---|---------------|---------------|---------------------------|---|----------------------|---------------|
|                           | Not Used By Motor Vehicles                  | During Year   | Cumulative    |                           | Not Used By Motor Vehicles                  | During Year          | Cumulative    |
| 1930                      |   |               |               | 1936                      | \$11,406,334                                | \$27,558,309         | \$97,993,213  |
| 1931                      |   |               |               | 1937                      | 13,592,017                                  | 329,604,360          | 1,337,567,790 |
| 1932                      |   |               |               | 1938                      | 13,636,089                                  | 331,194,700          | 1,640,768,501 |
| 1933                      | \$ 6,890,925                                | \$167,068,667 | \$167,068,667 | 1939                      | 13,174,545                                  | 310,625,905          | 1,964,618,456 |
| 1934                      | 10,551,408                                  | 226,179,461   | 425,548,380   | <b>Total</b>              | <b>60,857,486</b>                           | <b>1,964,618,456</b> |               |
| 1935                      | 11,398,101                                  | 226,189,496   | 710,437,924   |                           |   |                      |               |

Note: From the reports of the U.S. Bureau of Internal Revenue.

**First State to Charge for Motor Vehicle Registration—New York** was the first state to charge a fee for registration of motor vehicles. This was in 1901 and the amount collected that year was \$954.



## CLASSIFIED STATE HIGHWAY MILEAGE BY TYPES BY YEARS

Source: Public Roads Administration Data

## PRIMARY MILEAGE

| NON - SURFACED      |         |                              |                    |         |                        |                         | SURFACED |  |                    |                                       |                          |                 |  | Low - Cost Bituminous Mix |
|---------------------|---------|------------------------------|--------------------|---------|------------------------|-------------------------|----------|--|--------------------|---------------------------------------|--------------------------|-----------------|--|---------------------------|
| Grand Total Mileage | Total   | Unimproved And Partly Graded | Graded And Drained | Total   | Sand-Clay And Top Soil | Gravel Chert Shale Etc. | Year     | Waterbound Macadam And Surface Treated | Bituminous Macadam | Sheet Asphalt And Bituminous Concrete | Portland Cement Concrete | Brick And Block |  |                           |
| 208,915             | 118,543 | 97,159                       | 21,384             | 84,372  | 8,709                  | 36,279                  | 1921     | 16,976                                 | 6,708              | 2,844                                 | 9,860                    | 2,003           |  |                           |
| 227,260             | 129,370 | 100,500                      | 28,870             | 97,690  | 8,790                  | 43,660                  | 1922     | 17,640                                 | 7,780              | 3,700                                 | 13,890                   | 2,430           |  |                           |
| 251,611             | 140,811 | 103,843                      | 36,968             | 111,400 | 8,875                  | 50,034                  | 1923     | 18,304                                 | 8,847              | 4,589                                 | 17,918                   | 2,685           |  |                           |
| 261,616             | 129,107 | 94,651                       | 34,456             | 132,109 | 10,446                 | 60,431                  | 1924     | 19,759                                 | 10,346             | 5,212                                 | 22,625                   | 3,090           |  |                           |
| 274,911             | 130,057 | 103,271                      | 26,786             | 144,854 | 11,025                 | 68,771                  | 1925     | 16,709                                 | 12,108             | 5,414                                 | 27,645                   | 3,185           |  |                           |
| 287,928             | 124,869 | 96,413                       | 28,456             | 163,059 | 11,396                 | 79,286                  | 1926     | 16,426                                 | 12,927             | 5,708                                 | 31,936                   | 3,380           |  |                           |
| 293,352             | 118,786 | 86,616                       | 29,970             | 176,566 | 12,561                 | 86,094                  | 1927     | 17,752                                 | 13,496             | 6,396                                 | 36,915                   | 3,330           |  |                           |
| 306,442             | 113,304 | 81,549                       | 31,765             | 193,138 | 13,499                 | 93,124                  | 1928     | 18,142                                 | 15,200             | 6,890                                 | 42,957                   | 3,326           |  |                           |
| 314,163             | 106,158 | 77,259                       | 28,899             | 208,005 | 15,442                 | 98,947                  | 1929     | 18,691                                 | 14,054             | 7,234                                 | 50,169                   | 3,268           |  |                           |
| 324,496             | 96,275  | 69,910                       | 26,365             | 226,221 | 15,132                 | 106,726                 | 1930     | 20,229                                 | 14,590             | 8,071                                 | 56,208                   | 3,243           |  |                           |
| 328,942             | 86,242  | 61,319                       | 24,923             | 242,700 | 14,402                 | 112,800                 | 1931     | 19,157                                 | 15,356             | 10,312                                | 67,346                   | 3,325           |  |                           |
| 336,220             | 92,150  | 72,743                       | 19,407             | 266,060 | 13,158                 | 123,870                 | 1932     | 19,297                                 | 20,009             | 12,179                                | 73,964                   | 3,563           |  |                           |
| 345,751             | 73,906  | 54,666                       | 19,040             | 271,645 | 11,079                 | 129,216                 | 1933     | 17,700                                 | 20,063             | 13,478                                | 77,249                   | 3,060           |  |                           |
| 324,312             | 52,698  | 32,069                       | 20,629             | 271,614 | 15,772                 | 102,000                 | 1934     | 19,879                                 | 14,211             | 13,335                                | 76,917                   | 3,228           |  |                           |
| 331,667             | 52,060  | 32,110                       | 19,950             | 279,807 | 17,138                 | 104,021                 | 1935     | 19,750                                 | 14,363             | 14,265                                | 76,672                   | 3,025           |  |                           |
| 340,160             | 51,057  | 32,530                       | 18,537             | 289,103 | 17,364                 | 103,956                 | 1936     | 20,261                                 | 14,232             | 15,100                                | 81,263                   | 3,080           |  |                           |
| 347,152             | 41,061  | 24,523                       | 16,536             | 286,091 | 8,705                  | 63,955                  | 1937     | 61,163                                 | 18,366             | 13,718                                | 80,972                   | 2,434           |  |                           |
|                     |         |                              |                    |         |                        |                         |          |  |                    |                                       |                          | 33,606          |  |                           |
|                     |         |                              |                    |         |                        |                         |          |  |                    |                                       |                          | 38,504          |  |                           |

## SECONDARY MILEAGE

|         |        |        |        |         |        |        |      |        |       |       |       |     |  |  |       |
|---------|--------|--------|--------|---------|--------|--------|------|--------|-------|-------|-------|-----|--|--|-------|
| 155,169 | 96,521 | 66,989 | 29,532 | 36,648  | 17,948 | 15,540 | 1933 | 2,952  | 721   | 362   | 969   | 156 |  |  |       |
| 170,244 | 95,794 | 53,511 | 42,283 | 74,450  | 17,009 | 47,844 | 1934 | 2,469  | 397   | 436   | 1,167 | 166 |  |  | 4,942 |
| 173,603 | 96,559 | 52,681 | 43,878 | 77,244  | 17,018 | 50,457 | 1935 | 2,558  | 861   | 624   | 1,145 | 168 |  |  | 4,393 |
| 177,504 | 92,020 | 51,686 | 40,334 | 85,484  | 14,745 | 60,031 | 1936 | 3,244  | 641   | 613   | 1,179 | 174 |  |  | 4,657 |
| 188,931 | 87,540 | 39,427 | 48,053 | 101,391 | 26,193 | 42,785 | 1937 | 18,733 | 6,466 | 1,190 | 2,865 | 225 |  |  | 3,066 |

## MUNICIPAL EXTENSIONS

|        |     |     |     |        |     |       |      |       |       |       |       |       |  |  |       |
|--------|-----|-----|-----|--------|-----|-------|------|-------|-------|-------|-------|-------|--|--|-------|
| 16,396 | 600 | 317 | 283 | 15,796 | 210 | 1,932 | 1934 | 467   | 604   | 3,943 | 5,394 | 2,414 |  |  | 612   |
| 17,932 | 643 | 355 | 286 | 17,289 | 343 | 2,010 | 1935 | 458   | 942   | 3,991 | 6,401 | 2,414 |  |  | 730   |
| 19,026 | 658 | 339 | 319 | 18,368 | 231 | 2,118 | 1936 | 504   | 1,049 | 4,245 | 6,639 | 2,517 |  |  | 681   |
| 22,245 | 513 | 186 | 327 | 21,732 | 65  | 1,300 | 1937 | 2,068 | 968   | 4,194 | 7,663 | 2,076 |  |  | 1,477 |

## SUMMARY OF MILEAGE UNDER STATE CONTROL

|         |         |         |        |         |        |         |      |        |        |        |        |       |  |  |        |
|---------|---------|---------|--------|---------|--------|---------|------|--------|--------|--------|--------|-------|--|--|--------|
| 480,620 | 170,427 | 121,835 | 48,572 | 310,493 | 29,027 | 144,756 | 1933 | 20,852 | 20,764 | 15,840 | 78,216 | 3,216 |  |  | 29,626 |
| 510,952 | 149,092 | 85,897  | 63,195 | 361,860 | 32,991 | 151,776 | 1934 | 22,855 | 15,412 | 17,714 | 85,478 | 3,806 |  |  | 32,496 |
| 523,402 | 149,062 | 85,146  | 63,916 | 374,340 | 34,499 | 156,486 | 1935 | 22,766 | 16,186 | 18,880 | 87,418 | 3,807 |  |  | 32,496 |
| 536,690 | 143,735 | 84,545  | 59,190 | 362,955 | 32,330 | 160,101 | 1936 | 24,029 | 16,122 | 19,958 | 89,301 | 3,771 |  |  | 39,343 |
| 558,328 | 129,114 | 64,196  | 64,918 | 409,214 | 31,963 | 166,040 | 1937 | 81,964 | 28,820 | 19,102 | 91,220 | 4,735 |  |  | 45,049 |

Note: The Following Must be Added as a Miscellaneous Column to the Above Table:  
 Under Primary Mileage—993 Miles in 1921; 1274 Miles, Dual Type and Unclassified in 1937.  
 Under Secondary Mileage—126 Miles, Dual Type and Unclassified in 1937.  
 Under Municipal Extensions—1921 Miles, Dual Type and Unclassified in 1937.

RURAL HIGHWAY MILEAGE STATUS  
Partially Estimated

Source: Public Roads Administration

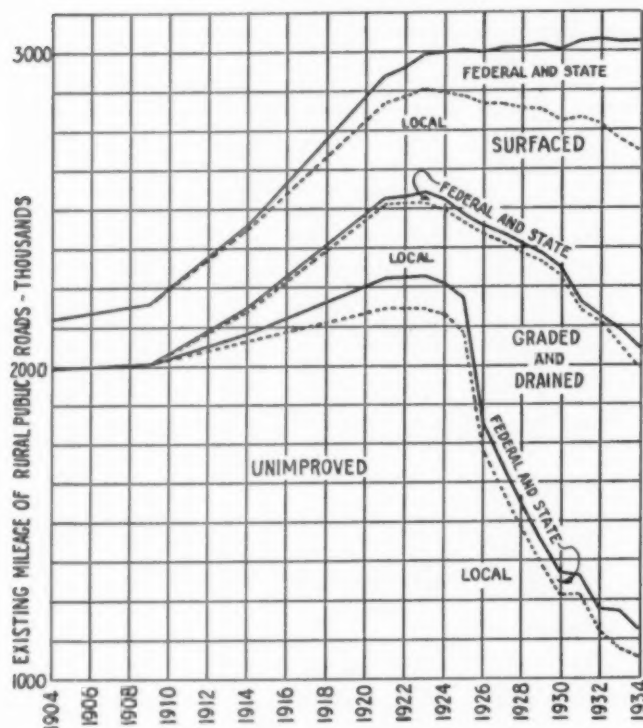
| Calendar Year | FEDERAL AND STATE |                    |                                    |                                  |                    |                     |                          |                 | LOCAL   |            |                    |                                    |                                  |
|---------------|-------------------|--------------------|------------------------------------|----------------------------------|--------------------|---------------------|--------------------------|-----------------|---------|------------|--------------------|------------------------------------|----------------------------------|
|               | Unimproved        | Graded And Drained | Untreated Sand-Clay Gravel Macadam | Treated Sand-Clay Gravel Macadam | Bituminous Macadam | Bituminous Concrete | Portland Cement Concrete | Brick And Block | Total   | Unimproved | Graded And Drained | Untreated Sand-Clay Gravel Macadam | Treated Sand-Clay Gravel Macadam |
| 1921          | 97,159            | 21,384             | 32,857                             | 10,700                           | 6,708              | 2,844               | 9,860                    | 2,003           | 202,912 | 2,106,495  | 232,010            | 277,009                            | 11,453                           |
| 1922          | 100,579           | 28,572             | 27,443                             | 12,076                           | 7,508              | 3,558               | 12,918                   | 2,450           | 221,905 | 2,185,542  | 231,909            | 285,428                            | 11,622                           |
| 1923          | 103,843           | 36,368             | 63,707                             | 13,506                           | 8,647              | 4,599               | 17,916                   | 2,655           | 251,611 | 2,194,509  | 231,788            | 295,646                            | 12,268                           |
| 1924          | 94,655            | 34,455             | 76,453                             | 14,183                           | 10,346             | 5,211               | 22,625                   | 3,090           | 261,216 | 2,169,058  | 234,579            | 304,450                            | 12,789                           |
| 1925          | 103,271           | 26,786             | 80,176                             | 16,330                           | 12,105             | 5,414               | 27,645                   | 3,185           | 274,911 | 2,111,328  | 245,440            | 332,170                            | 15,680                           |
| 1926          | 96,413            | 28,456             | 89,260                             | 19,850                           | 12,927             | 5,706               | 31,936                   | 3,380           | 287,928 | 1,725,454  | 596,603            | 341,322                            | 18,645                           |
| 1927          | 86,616            | 29,970             | 93,770                             | 22,657                           | 13,496             | 6,396               | 36,915                   | 3,330           | 293,352 | 1,599,349  | 708,727            | 361,454                            | 19,904                           |
| 1928          | 81,549            | 31,765             | 98,901                             | 25,664                           | 15,200             | 6,890               | 42,957                   | 3,326           | 306,442 | 1,477,008  | 799,651            | 377,678                            | 21,137                           |
| 1929          | 77,259            | 28,899             | 103,958                            | 29,322                           | 14,054             | 7,234               | 50,169                   | 3,268           | 314,163 | 1,365,880  | 692,106            | 366,346                            | 23,482                           |
| 1930          | 69,910            | 27,618             | 109,448                            | 33,211                           | 14,590             | 8,071               | 56,208                   | 3,243           | 324,496 | 1,267,314  | 949,916            | 400,410                            | 25,338                           |
| 1931          | 61,319            | 24,923             | 109,535                            | 36,624                           | 15,356             | 10,312              | 67,346                   | 3,325           | 328,942 | 1,266,899  | 821,117            | 406,788                            | 34,626                           |
| 1932          | 72,743            | 19,407             | 109,427                            | 46,998                           | 20,009             | 12,179              | 73,964                   | 3,563           | 336,220 | 1,149,791  | 918,795            | 521,190                            | 44,662                           |
| 1933          | 121,855           | 46,972             | 125,296                            | 69,139                           | 20,764             | 15,840              | 78,216                   | 3,216           | 480,292 | 1,093,461  | 852,161            | 502,173                            | 56,184                           |
| 1934          | 85,960            | 62,912             | 129,080                            | 105,167                          | 14,608             | 13,771              | 80,084                   | 3,594           | 494,656 | 1,067,200  | 843,072            | 511,208                            | 65,286                           |

1/ Includes low cost bituminous mix

| LOCAL                      |                             |                                |                       | TOTAL     |                 |                          |   |   |                            |                             |                                |                       |           |  |  |
|----------------------------|-----------------------------|--------------------------------|-----------------------|-----------|-----------------|--------------------------|---|---|----------------------------|-----------------------------|--------------------------------|-----------------------|-----------|--|--|
| Bitu-<br>minous<br>Macadam | Bitu-<br>minous<br>Concrete | Portland<br>Cement<br>Concrete | Brick<br>And<br>Block | Total     | Unim-<br>proved | Graded<br>And<br>Drained | Untreated<br>Sand-Clay<br>Gravel<br>Macadam | Treated<br>Sand-Clay<br>Gravel<br>Macadam | Bitu-<br>minous<br>Macadam | Bitu-<br>minous<br>Concrete | Portland<br>Cement<br>Concrete | Brick<br>And<br>Block | Total     |  |  |
| 3,556                      | 3,735                       | 5,905                          | 1,427                 | 2,721,590 | 2,285,654       | 253,394                  | 329,268                                     | 22,153                                    | 10,264                     | 6,579                       | 15,765                         | 3,430                 | 2,984,505 |  |  |
| 5,091                      | 3,954                       | 6,531                          | 1,491                 | 2,731,778 | 2,286,120       | 259,291                  | 342,881                                     | 23,697                                    | 12,699                     | 7,512                       | 19,449                         | 3,941                 | 2,954,780 |  |  |
| 6,950                      | 4,219                       | 7,289                          | 1,569                 | 2,744,116 | 2,286,332       | 265,154                  | 359,353                                     | 25,774                                    | 15,797                     | 8,778                       | 25,205                         | 4,454                 | 2,995,727 |  |  |
| 7,852                      | 4,479                       | 8,363                          | 1,626                 | 2,743,195 | 2,285,711       | 269,054                  | 360,903                                     | 26,972                                    | 16,198                     | 9,690                       | 31,168                         | 4,715                 | 3,004,411 |  |  |
| 10,490                     | 5,342                       | 10,106                         | 2,618                 | 2,731,172 | 2,214,597       | 270,226                  | 412,345                                     | 35,010                                    | 22,595                     | 10,756                      | 37,751                         | 5,203                 | 3,006,063 |  |  |
| 11,631                     | 5,155                       | 10,405                         | 1,627                 | 2,712,262 | 1,822,667       | 629,259                  | 430,562                                     | 36,495                                    | 24,578                     | 10,861                      | 42,341                         | 5,207                 | 3,000,190 |  |  |
| 13,525                     | 5,134                       | 11,458                         | 1,700                 | 2,720,231 | 1,686,165       | 736,697                  | 455,224                                     | 41,561                                    | 27,021                     | 11,532                      | 48,353                         | 5,031                 | 3,013,594 |  |  |
| 14,983                     | 5,335                       | 12,317                         | 1,681                 | 2,709,839 | 1,556,556       | 831,566                  | 476,577                                     | 47,001                                    | 30,153                     | 12,125                      | 55,274                         | 5,007                 | 3,016,231 |  |  |
| 16,692                     | 5,596                       | 13,254                         | 1,799                 | 2,710,097 | 1,441,139       | 921,005                  | 497,306                                     | 52,744                                    | 30,746                     | 12,630                      | 63,423                         | 5,067                 | 3,024,280 |  |  |
| 19,059                     | 6,019                       | 14,656                         | 1,662                 | 2,684,570 | 1,337,224       | 977,754                  | 509,650                                     | 56,543                                    | 33,649                     | 14,090                      | 72,664                         | 5,106                 | 3,009,068 |  |  |
| 22,996                     | 6,301                       | 15,708                         | 1,409                 | 2,707,044 | 1,350,218       | 876,040                  | 616,323                                     | 71,650                                    | 38,352                     | 15,613                      | 85,056                         | 4,734                 | 3,035,986 |  |  |
| 25,297                     | 6,630                       | 15,168                         | 1,269                 | 2,681,768 | 1,222,534       | 938,192                  | 630,617                                     | 91,560                                    | 45,306                     | 17,009                      | 93,099                         | 4,632                 | 3,039,996 |  |  |
| 28,053                     | 6,274                       | 13,960                         | 1,217                 | 2,580,503 | 1,315,316       | 900,733                  | 627,469                                     | 125,323                                   | 45,637                     | 19,114                      | 92,196                         | 4,433                 | 3,031,423 |  |  |
| 29,175                     | 6,039                       | 13,971                         | 1,208                 | 2,539,157 | 1,152,780       | 905,964                  | 640,256                                     | 173,443                                   | 43,783                     | 18,012                      | 94,055                         | 4,628                 | 3,035,773 |  |  |

# TOTAL RURAL HIGHWAY MILEAGE STATUS

Source: Public Roads Administration Data



Note: Chart Plotted From Table Bottom Page 45.

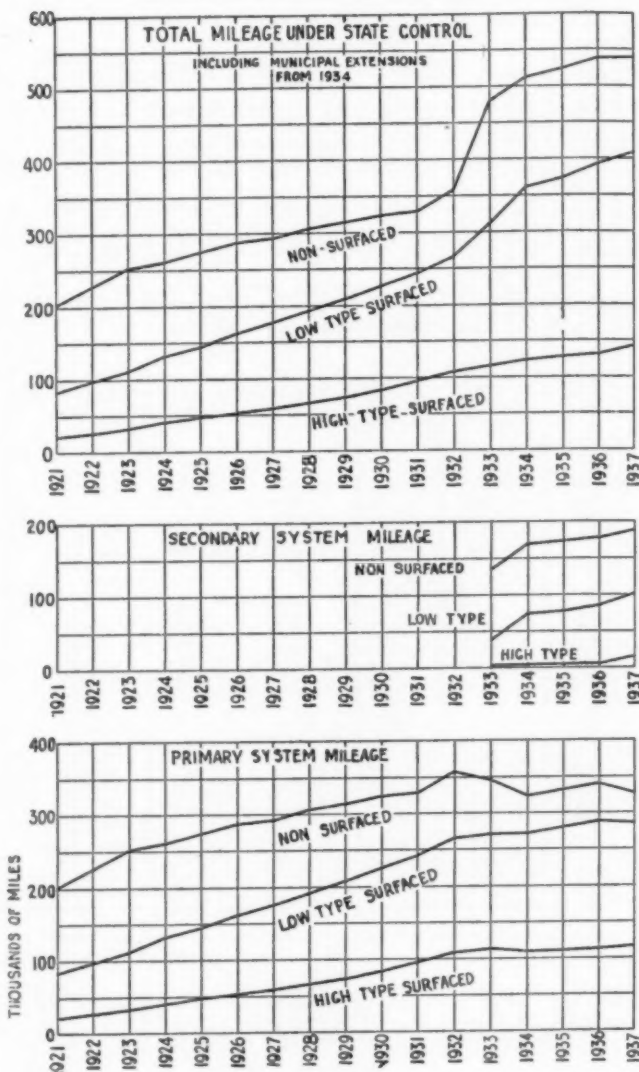
## STATUS OF ALL-WEATHER IMPROVED HIGHWAYS —STATE HIGHWAY SYSTEMS, JAN. 1, 1937

Source: American Association of State Highway Officials in H. R. 8838

| State               | State system mileage | Pavements of all types | Treated and low cost mix | Total all-weather | Percent all-weather |
|---------------------|----------------------|------------------------|--------------------------|-------------------|---------------------|
| Alabama.....        | 6,500                | 1,873                  | 795                      | 2,668             | 41                  |
| Arizona.....        | 3,383                | 226                    | 1,584                    | 1,810             | 53                  |
| Arkansas.....       | 8,945                | 1,687                  | 409                      | 2,096             | 23                  |
| California.....     | 12,823               | 5,537                  | 6,119                    | 11,656            | 99                  |
| Colorado.....       | 9,437                | 529                    | 2,138                    | 2,667             | 28                  |
| Connecticut.....    | 2,655                | 1,306                  | 1,258                    | 2,564             | 97                  |
| Delaware.....       | 1,283                | 1,250                  | 83                       | 1,283             | 100                 |
| Florida.....        | 12,430               | 1,275                  | 6,186                    | 7,461             | 65                  |
| Georgia.....        | 9,881                | 2,744                  | 2,423                    | 5,167             | 52                  |
| Idaho.....          | 4,938                | 194                    | 1,835                    | 2,029             | 41                  |
| Illinois.....       | 17,489               | 12,809                 | 3,746                    | 16,555            | 94                  |
| Indiana.....        | 8,925                | 4,641                  | 3,692                    | 8,333             | 93                  |
| Iowa.....           | 8,318                | 4,074                  | 470                      | 5,144             | 62                  |
| Kansas.....         | 9,097                | 1,581                  | 2,913                    | 4,494             | 49                  |
| Kentucky.....       | 8,720                | 1,272                  | 3,835                    | 5,107             | 59                  |
| Louisiana.....      | 18,235               | 2,305                  | 1,396                    | 3,701             | 20                  |
| Maine.....          | 2,586                | 738                    | 1,672                    | 2,410             | 93                  |
| Maryland.....       | 3,979                | 2,134                  | 1,726                    | 3,860             | 99                  |
| Massachusetts.....  | 1,887                | 1,738                  | 149                      | 1,887             | 100                 |
| Michigan.....       | 9,880                | 4,435                  | 700                      | 5,135             | 52                  |
| Minnesota.....      | 11,225               | 2,799                  | 3,445                    | 6,244             | 57                  |
| Mississippi.....    | 6,363                | 806                    | 194                      | 1,000             | 16                  |
| Missouri.....       | 17,193               | 4,156                  | 2,147                    | 6,303             | 40                  |
| Montana.....        | 8,515                | 29                     | 4,147                    | 4,176             | 49                  |
| Nebraska.....       | 11,142               | 1,064                  | 959                      | 2,023             | 18                  |
| Nevada.....         | 4,938                | 56                     | 2,122                    | 2,178             | 44                  |
| New Hampshire.....  | 3,367                | 468                    | 2,730                    | 3,196             | 95                  |
| New Jersey.....     | 1,886                | 1,887                  | 18                       | 1,905             | 85                  |
| New Mexico.....     | 10,063               | 120                    | 1,725                    | 1,845             | 11                  |
| New York.....       | 13,907               | 10,410                 | 2,185                    | 12,595            | 91                  |
| North Carolina..... | 11,118               | 4,258                  | 4,110                    | 8,368             | 75                  |
| North Dakota.....   | 7,313                | 55                     | 656                      | 711               | 10                  |
| Ohio.....           | 14,647               | 6,475                  | 1,048                    | 7,523             | 52                  |
| Oklahoma.....       | 8,460                | 3,088                  | 976                      | 4,064             | 48                  |
| Oregon.....         | 6,728                | 1,772                  | 1,955                    | 3,757             | 56                  |
| Pennsylvania.....   | 35,032               | 7,693                  | 17,275                   | 24,968            | 66                  |
| Rhode Island.....   | 1,138                | 535                    | 227                      | 762               | 67                  |
| South Carolina..... | 6,348                | 2,421                  | 3,166                    | 5,587             | 88                  |
| South Dakota.....   | 6,106                | 244                    | 931                      | 1,175             | 19                  |
| Tennessee.....      | 7,261                | 2,294                  | 1,782                    | 4,076             | 56                  |
| Texas.....          | 20,955               | 5,579                  | 9,960                    | 15,539            | 74                  |
| Utah.....           | 6,129                | 502                    | 1,415                    | 1,917             | 37                  |
| Vermont.....        | 1,766                | 456                    | 558                      | 1,014             | 57                  |
| Virginia.....       | 9,215                | 1,430                  | 5,909                    | 7,339             | 80                  |
| Washington.....     | 3,372                | 1,250                  | 1,758                    | 3,008             | 89                  |
| West Virginia.....  | 35,678               | 3,250                  | 1,736                    | 4,986             | 15                  |
| Wisconsin.....      | 10,011               | 4,424                  | 3,709                    | 8,133             | 81                  |
| Wyoming.....        | 3,565                | 49                     | 2,631                    | 2,680             | 75                  |
| Total.....          | 444,765              | 120,216                | 122,633                  | 242,849           | 54                  |
| Percent.....        | 100                  | 27                     | 27                       | 54                |                     |

## EXISTING TOTAL MILEAGE UNDER STATE CONTROL BY TYPES BY YEARS, 1921-1937

Source: Public Roads Administration Data



## STATE HIGHWAY MILEAGE—1937

Existing Mileage on Primary System of Rural State Highways  
Source: Public Roads Administration, Issued December, 1939

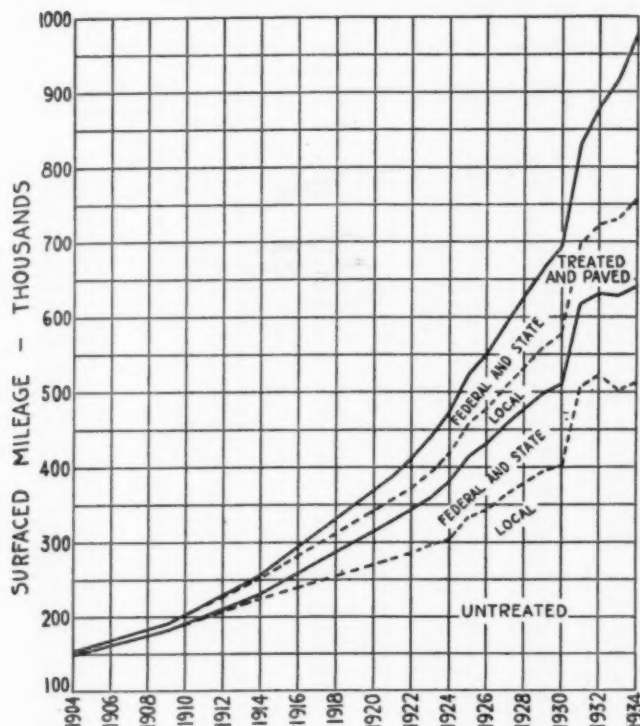
|  |         |
|--|---------|
| Total.....                                 | 327,152 |
| Nonsurfaced Mileage.....                   | 41,061  |
| Total.....                                 | 848     |
| Primitive.....                             | 23,675  |
| Unimproved.....                            | 16,538  |
| Graded and Drained.....                    |         |
| Surfaced Mileage Classified By Types.....  | 286,091 |
| Total.....                                 | 5,705   |
| Soil-surfaced.....                         | 63,955  |
| Gravel or Stone.....                       | 61,163  |
| Bituminous surfaced treated.....           | 38,504  |
| Mixed bituminous.....                      | 18,366  |
| Bituminous penetration.....                | 13,718  |
| Bituminous concrete and sheet asphalt..... | 80,972  |
| Portland cement concrete.....              | 2,310   |
| Brick.....                                 | 124     |
| Block.....                                 | 1,231   |
| Dual-type.....                             | 43      |
| Not classified by types.....               |         |

WPA Highway, Road and Street Projects—Federal expenditures on highway, road and street projects operated by the Works Projects Administration by fiscal years, July, 1935, through December, 1939, were as follows: 1936, \$406,781,000; 1937, \$593,616,000; 1938, \$501,336,000; 1939, \$881,448,000; 1940 through December, 1939, \$282,929,000.



## SURFACED RURAL HIGHWAY MILEAGE

Source: Public Roads Administration Data



Note: See Introductory Reading Page. Local Road Data Not Compiled for Publication After 1931, Hence 1932, 1933 and 1934 Estimated. 1934 Last Date Prior to Inauguration of State-Wide Highway Planning Surveys From Which Total Data Not Yet Available.

## MOTOR VEHICLE TRAFFIC IN 1930 AND 1936 ON RURAL STATE TRUNK LINES THAT CONNECT DETROIT AND TOLEDO, AND DETROIT AND CHICAGO

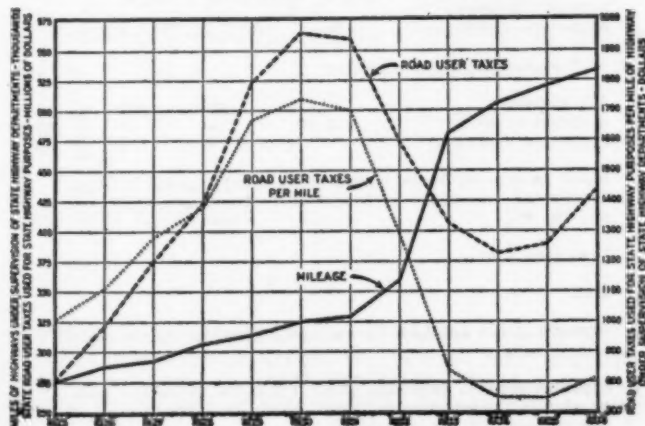
Source: Proceeding 24th Annual Michigan Highway Conference

|                                   | Average Daily Traffic Volume |         |        |         |     |  | Percent of Increase 1930 to 1936 <sup>1/</sup> |
|-----------------------------------|------------------------------|---------|--------|---------|-----|--|--|
|                                   | 1930                         |         | 1936   |         |     |  |  |
|                                   | Number                       | Percent | Number | Percent |     |  |  |
| Detroit and Toledo:               |                              |         |        |         |     |  |  |
| Passenger cars                    | 5,257                        | 86      | 5,583  | 78      | 25  |  |  |
| Trucks and busses                 | 550                          | 9       | 608    | 7       | 11  |  |  |
| Tractors and trucks with trailers | 306                          | 5       | 1,235  | 15      | 304 |  |  |
| All Vehicles                      | 6,113                        | 100     | 8,426  | 100     | 38  |  |  |
| Detroit and Chicago:              |                              |         |        |         |     |  |  |
| Passenger cars                    | 4,931                        | 87      | 5,984  | 80      | 21  |  |  |
| Tractors and Busses               | 684                          | 11      | 709    | 10      | 14  |  |  |
| Tractors and trucks with trailers | 115                          | 2       | 787    | 10      | 670 |  |  |
| All Vehicles                      | 5,668                        | 100     | 7,480  | 100     | 32  |  |  |

1/ All traffic in the State increased 18 percent 1930 to 1936.

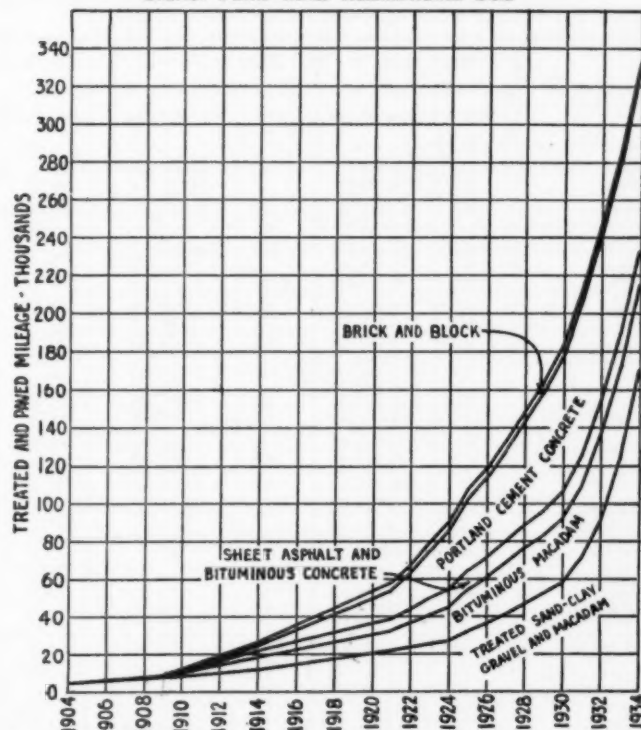
## COMPARISON OF HIGHWAY MILEAGE UNDER STATE SUPERVISION AND ROAD USER TAXES AVAILABLE FOR STATE HIGHWAY PURPOSES EXCLUSIVE OF DEBT SERVICE

Source: Hearings on H.R. 8838—75th Congress



## TREATED AND PAVED RURAL HIGHWAY MILEAGE STATUS IN THE UNITED STATES

Source: Public Roads Administration Data



## MILES OF INITIAL CONSTRUCTION ON SECONDARY ROADS AS OF DEC. 31, 1939

Source: Hearings on H. R. 7891—76th Congress

| Type of improvement                      | Initial miles              |               |               |
|--|----------------------------|---------------|---------------|
|  | Approved but not completed | Completed     | Total         |
| Graded and drained.....                  | 333                        | 5,130         | 5,473         |
| Sand-clay, untreated.....                | 162                        | 1,432         | 1,594         |
| Sand-clay, treated.....                  | 78                         | 854           | 932           |
| Gravel, untreated.....                   | 713                        | 12,894        | 13,607        |
| Gravel, treated.....                     | 174                        | 1,749         | 1,923         |
| Macadam, untreated.....                  | 2                          | 384           | 386           |
| Macadam, treated.....                    | 138                        | 1,019         | 1,157         |
| Low-cost bituminous mix.....             | 148                        | 1,575         | 1,723         |
| Bituminous macadam.....                  | 38                         | 848           | 886           |
| Bituminous concrete.....                 | 21                         | 512           | 533           |
| Portland cement concrete.....            | 40                         | 796           | 836           |
| Block.....                               | 1                          | 85            | 86            |
| Bridges.....                             | 11                         | 102           | 113           |
| Grade separations (railroad-highway).... | 4                          | 36            | 40            |
| <b>Total.....</b>                        | <b>1,863</b>               | <b>27,375</b> | <b>29,238</b> |

## ESTIMATED TOTAL STREET MILEAGE AND "GENERAL USE" MILEAGE

Source: Public Aids to Motor Vehicle Transportation

| Population Group    | Estimated Total Mileage | Estimated "General Use" Amount | Percent     |
|---------------------|-------------------------|--------------------------------|-------------|
| 2,500 - 25,000      | 79,386                  | 25,082                         | 29.0        |
| 25,001 - 50,000     | 16,984                  | 4,416                          | 26.0        |
| 50,001 - 100,000    | 16,681                  | 3,657                          | 22.0        |
| 100,001 - 250,000   | 16,791                  | 3,082                          | 18.0        |
| 250,001 - 1,000,000 | 29,568                  | 3,607                          | 12.2        |
| 1,000,000 - over    | 12,609                  | 1,266                          | 10.0        |
| <b>Total</b>        | <b>172,009</b>          | <b>38,990</b>                  | <b>22.7</b> |

Motor Fuel Tax Collections in 1919—In 1919 only four states levied an gas tax. The amount collected from this tax by the four states was \$1,022,514.

# MINIMUM MILEAGE INVOLVED FOR IMMEDIATE IMPROVEMENT BECAUSE OF TRAFFIC AND SAFETY CONDITIONS

Source: American Association of State Highway Officials

| STATE               | Should Be Rebuilt |                      | Should Be Widened |                    | Should Be Re/located |                      | Total Miles    | Total Estimated Cost | Bridges to be Widened or Re-built |                    | Estimated Grand Total Cost Roads and Bridges |
|---------------------|-------------------|----------------------|-------------------|--------------------|----------------------|----------------------|----------------|----------------------|-----------------------------------|--------------------|--|
|                     | Miles             | Estimated Cost       | Miles             | Estimated Cost     | Miles                | Estimated Cost       |                |                      | Number                            | Estimated Cost     |  |
| Alabama.....        | 300               | \$9,000,000          | 500               | \$3,000,000        | 500                  | \$29,000,000         | 1,300          | \$37,000,000         | 150                               | \$5,000,000        | \$46,000,000                                 |
| Arizona.....        | 280               | 5,950,000            | 482               | 4,980,000          | 233                  | 9,110,000            | 945            | 18,040,000           | 13                                | 1,430,000          | 19,470,000                                   |
| Arkansas.....       | 600               | 20,000,000           | 800               | 12,000,000         | 200                  | 7,000,000            | 1,600          | 39,000,000           | .....                             | 6,500,000          | 45,500,000                                   |
| California.....     | 7,800             | 209,000,000          | 1,300             | 130,000,000        | 1,700                | 106,000,000          | 10,700         | 434,000,000          | 2,800                             | 70,000,000         | \$804,000,000                                |
| Colorado.....       | 450               | 18,000,000           | 500               | 30,000,000         | 450                  | 18,000,000           | 1,400          | 66,000,000           | 600                               | 15,000,000         | 81,000,000                                   |
| Connecticut.....    | 400               | 20,000,000           | 300               | 30,000,000         | 300                  | 30,000,000           | 1,000          | 30,000,000           | 90                                | 5,000,000          | 35,000,000                                   |
| Delaware.....       | 66                | 2,800,000            | 119               | 1,600,000          | 8                    | 400,000              | 183            | 4,800,000            | .....                             | 350,000            | 5,150,000                                    |
| Florida.....        | 2,097             | 79,395,000           | 1,688             | 47,680,000         | 209                  | 8,000,000            | 3,883          | 128,975,000          | 75                                | 11,250,000         | 140,225,000                                  |
| Georgia.....        | 416               | 8,300,000            | 572               | 9,150,000          | 112                  | 4,500,000            | 1,100          | 21,950,000           | 242                               | 2,050,000          | 24,000,000                                   |
| Idaho.....          | 240               | 4,000,000            | 354               | 3,100,000          | 412                  | 3,400,000            | 1,006          | 15,500,000           | 45                                | 1,400,000          | 16,900,000                                   |
| Illinois.....       | 198               | 9,371,000            | 105               | 6,252,000          | 139                  | 6,147,000            | 422            | 20,770,000           | 179                               | 2,765,000          | 23,535,000                                   |
| Indiana.....        | 231               | 6,930,000            | 573               | 19,355,000         | 65                   | 3,550,000            | 842            | 30,335,000           | 527                               | 9,300,000          | 39,635,000                                   |
| Iowa.....           | 50                | 2,000,000            | 700               | 18,000,000         | 250                  | 18,000,000           | 1,000          | 30,000,000           | 100                               | 4,000,000          | 34,000,000                                   |
| Kansas.....         | 1,120             | 49,800,000           | 45                | 2,200,000          | 1,030                | 48,600,000           | 2,195          | 100,700,000          | 1,315                             | 7,300,000          | 108,000,000                                  |
| Kentucky.....       | 1,189             | 22,168,000           | 4,010             | 31,217,000         | 1,955                | 59,720,000           | 7,154          | 113,105,000          | 1,797                             | 19,325,000         | 132,430,000                                  |
| Louisiana.....      | 54                | 2,040,000            | 633               | 16,510,000         | 318                  | 20,614,000           | 1,005          | 38,164,000           | .....                             | 12,921,000         | 51,085,000                                   |
| Maine.....          | 472               | 20,000,000           | 57                | 2,500,000          | 162                  | 9,000,000            | 691            | 31,500,000           | 60                                | 2,200,000          | 33,700,000                                   |
| Maryland.....       | 379               | 11,600,000           | 310               | 9,000,000          | 439                  | 22,700,000           | 1,110          | 43,300,000           | 50                                | 4,700,000          | 48,000,000                                   |
| Massachusetts.....  | 160               | 12,300,000           | 210               | 22,800,000         | 460                  | 34,400,000           | 830            | 119,400,000          | (*)                               | (*)                | 119,400,000                                  |
| Michigan.....       | 3,331             | 101,712,000          | 564               | 24,860,000         | 709                  | 27,982,000           | 4,604          | 154,554,000          | 218                               | 9,784,000          | 164,338,000                                  |
| Minnesota.....      | 1,144             | 22,880,000           | 207               | 12,420,000         | 464                  | 9,270,000            | 1,815          | 44,570,000           | 90                                | 6,000,000          | 50,570,000                                   |
| Mississippi.....    | 49                | 2,305,000            | .....             | .....              | 185                  | 8,280,000            | 234            | 8,585,000            | 4                                 | 1,050,000          | 9,635,000                                    |
| Missouri.....       | 3,625             | 66,642,000           | 200               | 4,000,000          | 350                  | 14,400,000           | 4,185          | 35,042,000           | (*)                               | (*)                | 35,042,000                                   |
| Montana.....        | 1,700             | 42,500,000           | .....             | (a)                | .....                | (a)                  | 1,700          | 42,500,000           | 100                               | 4,000,000          | 46,500,000                                   |
| Nebraska.....       | 1,050             | 15,750,000           | (*)               | (*)                | 700                  | 18,000,000           | 1,750          | 26,250,000           | 400                               | 5,000,000          | 31,250,000                                   |
| Nevada.....         | 450               | 11,250,000           | 100               | 2,000,000          | 25                   | 750,000              | 575            | 14,000,000           | 20                                | 600,000            | 14,600,000                                   |
| New Hampshire.....  | 600               | 15,000,000           | 900               | 4,000,000          | .....                | .....                | 1,500          | 19,000,000           | 200                               | 8,000,000          | 27,000,000                                   |
| New Jersey.....     | 125               | 12,000,000           | 275               | 33,000,000         | 230                  | 70,000,000           | 690            | 115,000,000          | 450                               | 44,000,000         | 159,000,000                                  |
| New Mexico.....     | 44                | 455,000              | 822               | 4,150,000          | 146                  | 5,000,000            | 1,012          | 9,600,000            | 880                               | 4,500,000          | 14,100,000                                   |
| New York.....       | 2,582             | 129,520,000          | (a)               | .....              | (a)                  | .....                | 2,582          | 129,520,000          | 124                               | 5,504,000          | 135,024,000                                  |
| North Carolina..... | 425               | 8,500,000            | 690               | 5,520,000          | 405                  | 12,150,000           | 1,520          | 26,170,000           | 1,250                             | 17,000,000         | 43,170,000                                   |
| North Dakota.....   | 4,423             | 61,922,000           | (a)               | .....              | (a)                  | .....                | 4,423          | 61,922,000           | 180                               | 2,700,000          | 64,622,000                                   |
| Ohio.....           | 5,863             | 330,023,000          | (a)               | .....              | (a)                  | .....                | 5,863          | 330,023,000          | 1,495                             | 17,378,000         | 347,401,000                                  |
| Oklahoma.....       | 47                | 2,350,000            | 124               | 620,000            | 847                  | 48,350,000           | 1,018          | 45,320,000           | 760                               | 18,200,000         | 63,520,000                                   |
| Oregon.....         | 954               | 27,900,000           | 294               | 7,050,000          | 580                  | 61,750,000           | 1,938          | 86,700,000           | 881                               | 9,000,000          | 95,700,000                                   |
| Pennsylvania.....   | 1,120             | 73,600,000           | 1,550             | 99,975,000         | 1,060                | 89,425,000           | 3,730          | 243,000,000          | 780                               | 15,000,000         | 258,000,000                                  |
| Rhode Island.....   | 127               | 7,910,000            | 19                | 1,250,000          | 28                   | 4,430,000            | 174            | 10,590,000           | 8                                 | 450,000            | 11,040,000                                   |
| South Carolina..... | 295               | 5,675,000            | 1,048             | 16,375,000         | 200                  | 7,100,000            | 1,543          | 29,150,000           | 181                               | 6,100,000          | 35,250,000                                   |
| South Dakota.....   | 1,400             | 16,000,000           | (a)               | .....              | 100                  | 2,000,000            | 1,500          | 18,000,000           | 60                                | 2,000,000          | 20,000,000                                   |
| Tennessee.....      | 600               | 15,000,000           | 400               | 8,000,000          | 500                  | 21,000,000           | 1,600          | 44,000,000           | 275                               | 15,000,000         | 59,000,000                                   |
| Texas.....          | 850               | 17,000,000           | 1,600             | 24,000,000         | 3,500                | 133,000,000          | 6,250          | 174,000,000          | 354                               | 10,200,000         | 184,200,000                                  |
| Utah.....           | 43                | 2,070,000            | 891               | 7,050,000          | 71                   | 2,380,000            | 705            | 11,600,000           | 30                                | 1,500,000          | 13,000,000                                   |
| Vermont.....        | 777               | 28,488,000           | 511               | 7,406,000          | 100                  | 4,000,000            | 1,388          | 39,894,000           | 58                                | 1,519,000          | 41,413,000                                   |
| Virginia.....       | 1,000             | 25,000,000           | 2,000             | 50,000,000         | 1,000                | 38,000,000           | 4,000          | 105,000,000          | 3,000                             | 30,000,000         | 135,000,000                                  |
| Washington.....     | 890               | 48,000,000           | (a)               | .....              | (a)                  | .....                | 890            | 48,000,000           | (*)                               | (*)                | 48,000,000                                   |
| West Virginia.....  | 400               | 20,000,000           | 500               | 4,500,000          | .....                | .....                | 700            | 24,500,000           | 100                               | 4,000,000          | 28,500,000                                   |
| Wisconsin.....      | 8,300             | 119,000,000          | 1,000             | 23,000,000         | 500                  | 25,000,000           | 9,800          | 172,000,000          | 2,170                             | 22,000,000         | 194,000,000                                  |
| Wyoming.....        | 230               | 4,000,000            | 75                | 500,000            | 250                  | 5,000,000            | 555            | 9,500,000            | 80                                | 500,000            | 10,000,000                                   |
| <b>Total.....</b>   | <b>58,867</b>     | <b>1,737,101,000</b> | <b>26,326</b>     | <b>737,620,000</b> | <b>21,377</b>        | <b>1,029,008,000</b> | <b>106,560</b> | <b>3,500,629,000</b> | <b>21,682</b>                     | <b>444,476,000</b> | <b>3,945,105,000</b>                         |

\* Included under roads. (a) Included in Column 1.

## GRADE CROSSING ELIMINATIONS, JULY 1, 1939

Source: American Association of State Highway Officials in H. R. 7891

| State              | Number on State system not eliminated | Crossings eliminated on State system, 1927-38 | State               | Number on State system not eliminated | Crossings eliminated on State system, 1927-38 |
|--------------------|---------------------------------------|---|---------------------|---------------------------------------|---|
| Alabama.....       | 280                                   | 205   | Nevada.....         | 69                                    | 22  |
| Arizona.....       | 90                                    | 84  | New Hampshire.....  | 113                                   | 19  |
| Arkansas.....      | 408                                   | 247   | New Jersey.....     | 110                                   | 108   |
| California.....    | 1,089                                 | 222   | New Mexico.....     | 166                                   | 79  |
| Colorado.....      | 537                                   | 229   | New York.....       | .....                                 | 623   |
| Connecticut.....   | 91                                    | 27  | North Carolina..... | 406                                   | 209   |
| Delaware.....      | 331                                   | 11  | North Dakota.....   | 237                                   | 179   |
| Florida.....       | 400                                   | 58  | Ohio.....           | 1,000                                 | 124   |
| Georgia.....       | 513                                   | 68  | Oklahoma.....       | 208                                   | 288   |
| Idaho.....         | 176                                   | 80  | Oregon.....         | 179                                   | 53  |
| Illinois.....      | 1,213                                 | 318   | Pennsylvania.....   | 8,289                                 | 466   |
| Indiana.....       | 1,223                                 | 294   | Rhode Island.....   | 35                                    | 13  |
| Iowa.....          | 848                                   | 248   | South Carolina..... | 463                                   | 128   |
| Kansas.....        | 436                                   | 170   | South Dakota.....   | 237                                   | 49  |
| Kentucky.....      | 406                                   | 139   | Tennessee.....      | 340                                   | 224   |
| Louisiana.....     | 2,304                                 | 91  | Texas.....          | 1,095                                 | 225   |
| Maine.....         | 186                                   | 48  | Utah.....           | 326                                   | 77  |
| Maryland.....      | 204                                   | 80  | Vermont.....        | 71                                    | 55  |
| Massachusetts..... | 66                                    | 91  | Virginia.....       | 1,965                                 | 178   |
| Michigan.....      | 693                                   | 232   | Washington.....     | .....                                 | 62  |
| Minnesota.....     | 604                                   | 391   | West Virginia.....  | 2,838                                 | 48  |
| Mississippi.....   | 525                                   | 240   | Wisconsin.....      | 878                                   | 277   |
| Missouri.....      | 180                                   | 213   | Wyoming.....        | 34                                    | 53  |
| Montana.....       | 318                                   | 211   | <b>Total.....</b>   | <b>28,927</b>                         | <b>8,152</b>                                  |

\* Including 21 urban areas.

\* Excluding urban areas.

\* Information not available.

\* As of Dec. 31, 1937.

\* There are approximately 6,700 grade crossings in the State which have not yet been eliminated. The number of such crossings on the State System is not known.

\* Rural portion of State System only. Grade crossing data not yet available for urban mileage.

\* Excluding cities.

## HIGHWAY MILEAGE RELATIONSHIPS FOR CERTAIN YEARS

Source: Public Aids to Motor Vehicle Transportation

| Highway Mileage                     | 1904   | 1914  | 1921 | 1934   |
|-------------------------------------|--------|-------|------|--------|
| Per 1000 sq. mi. of land area:      |        |       |      |        |
| All highways                        | 725    | 832   | 977  | 1,006  |
| Surfaced highways                   | 52     | 86    | 130  | 389    |
| High-type surfacing                 | 2/     | 5     | 12   | 3/ 43  |
| Per 1000 population:                |        |       |      |        |
| All highways                        | 26     | 25    | 27   | 24     |
| Surfaced highways                   | 2      | 3     | 4    | 8      |
| High-type surfacing                 | 2/     | 0.1   | 0.3  | 3/ 1.2 |
| Per 1000 registered motor vehicles: |        |       |      |        |
| All highways                        | 39,116 | 1,429 | 278  | 5/ 120 |
| Surfaced highways                   | 2,791  | 150   | 37   | 5/ 39  |
| High-type surfacing                 | 3      | 8     | 4    | 3/ 6   |

1/ Based in part on Bulletin No. 1279, Rural Highway Mileage, Income and Expenditures, Bureau of Public Roads, 1925, pp. 78, 79.

2/ Less than 1 mile.

3/ 1931

4/ Census figures extended by average annual increase between census dates.

5/ Registrations in 1934 were about 1,600,000 below the peak of 26,545,000 vehicles in 1930. Using the 1930 total, 120 becomes 113 and 39 becomes 37.



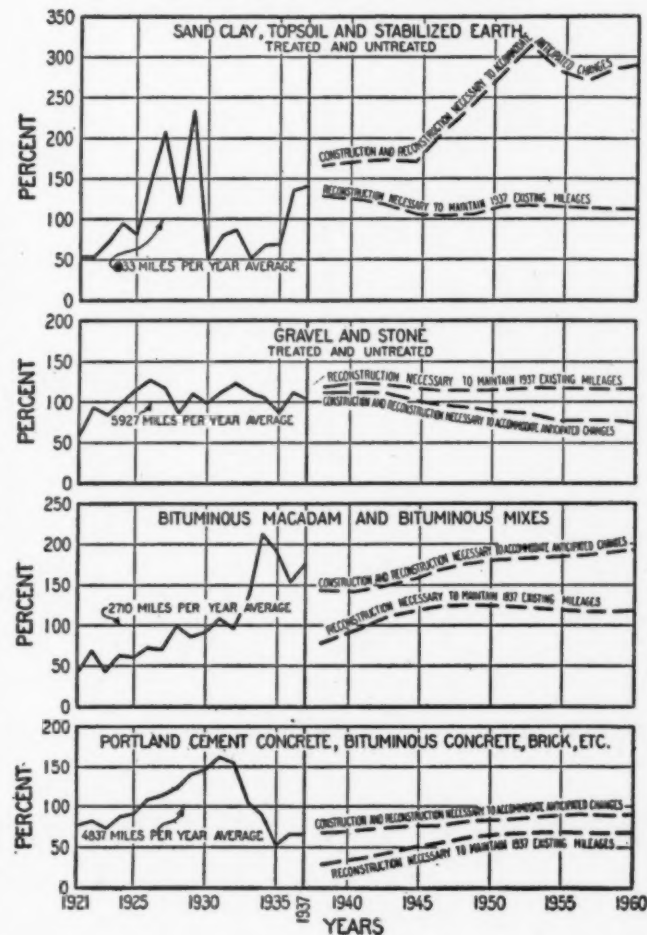
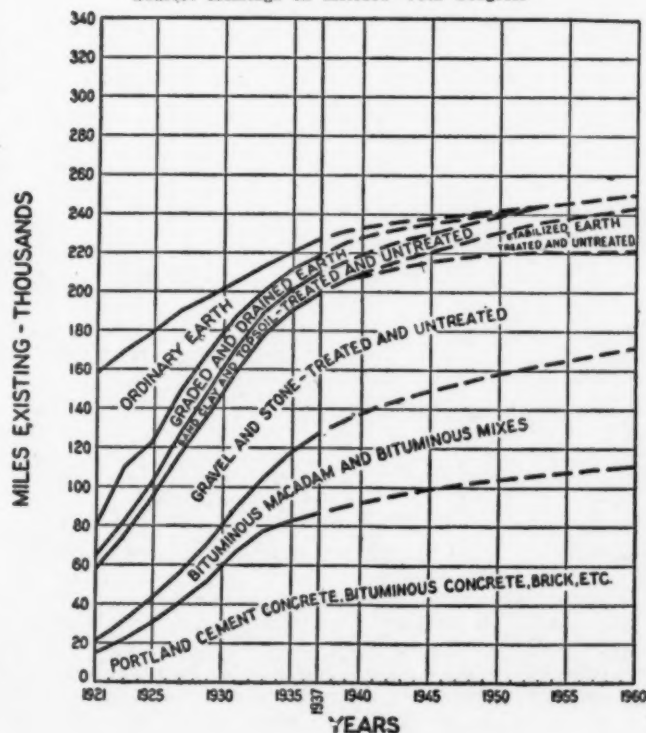
## RURAL ROAD MILEAGE OF THE UNITED STATES

Source: American Association of State Highway Officials

| State         | Federal-Aid System June 30, 1937 | State System Jan. 1, 1937 (includes Federal-Aid System) | Total Road Mileage in United States 1937 | Federal-Aid System June 30, 1939 | State System (includes Federal Aid System) June 30, 1939 | Total Road Mileage in the United States June 30, 1939 |
|---------------|----------------------------------|---|--|----------------------------------|--|---|
| Ala.          | 3,958                            | 6,500   | 74,999                                   | 3,954                            | 6,500  | 61,892  |
| Aris.         | 2,070                            | 3,383   | 23,576                                   | 2,214                            | 3,416  | 28,292  |
| Ark.          | 5,202                            | 8,945   | 74,022                                   | 5,075                            | 9,351  | 55,085  |
| Calif.        | 6,150                            | 12,823  | 74,285                                   | 6,145                            | 13,918   | 100,819   |
| Colo.         | 3,791                            | 9,437   | 74,457                                   | 3,750                            | 12,361   | 75,533  |
| Conn.         | 1,046                            | 2,655   | 12,054                                   | 1,046                            | 2,977  | 11,896  |
| Del.          | 802                              | 1,283   | 3,979                                    | 817                              | 3,852  | 3,882   |
| Fla.          | 2,477                            | 12,430  | 32,168                                   | 2,759                            | 7,372  | 29,262  |
| Ga.           | 5,686                            | 9,881   | 114,193                                  | 5,973                            | 11,215   | 98,094  |
| Idaho         | 3,395                            | 4,938   | 36,274                                   | 3,386                            | 4,855  | 28,308  |
| Ill.          | 8,713                            | 17,489  | 97,156                                   | 9,067                            | 10,963   | 103,184   |
| Ind.          | 5,334                            | 8,925   | 77,122                                   | 5,334                            | 9,779  | 76,603  |
| Ia.           | 7,654                            | 8,518   | 102,533                                  | 7,893                            | 9,626  | 102,969   |
| Kan.          | 6,689                            | 9,097   | 133,063                                  | 6,714                            | 9,888  | 128,961   |
| Ky.           | 3,706                            | 8,720   | 62,259                                   | 3,706                            | 9,490  | 57,062  |
| La.           | 2,765                            | 18,235  | 38,228                                   | 2,740                            | 18,897   | 39,880  |
| Me.           | 1,621                            | 2,586   | 20,441                                   | 1,621                            | 2,830  | 22,479  |
| Md.           | 2,188                            | 3,979   | 14,984                                   | 2,164                            | 4,260  | 17,031  |
| Mass.         | 1,650                            | 1,887   | 18,166                                   | 1,674                            | 1,891  | 23,916  |
| Mich.         | 5,932                            | 9,880   | 88,875                                   | 6,004                            | 9,456  | 92,899  |
| Minn.         | 7,534                            | 11,225  | 115,904                                  | 7,393                            | 11,372   | 118,637   |
| Miss.         | 3,695                            | 6,363   | 60,416                                   | 3,599                            | 6,295  | 61,067  |
| Mo.           | 7,957                            | 17,193  | 105,242                                  | 8,001                            | 15,459   | 114,783   |
| Mont.         | 5,737                            | 8,515   | 69,462                                   | 5,643                            | 6,310  | 65,729  |
| Nebr.         | 5,585                            | 11,142  | 94,231                                   | 5,612                            | 11,180   | 100,071   |
| Nev.          | 1,779                            | 4,938   | 16,461                                   | 2,066                            | 5,070  | 23,370  |
| N.Hamp.       | 1,000                            | 3,367   | 12,955                                   | 1,001                            | 3,548  | 13,593  |
| N.J.          | 1,526                            | 1,886   | 19,277                                   | 1,595                            | 1,662  | 23,448  |
| N.Mex.        | 3,655                            | 10,093  | 31,787                                   | 3,648                            | 12,947   | 12,947  |
| N.Y.          | 9,010                            | 13,907  | 85,486                                   | 9,257                            | 12,731   | 84,270  |
| N.Car.        | 6,922                            | 11,118  | 57,396                                   | 7,806                            | 11,232   | 58,334  |
| N.Dak.        | 7,222                            | 7,313   | 106,888                                  | 7,224                            | 7,047  | 109,861   |
| Ohio.         | 7,081                            | 14,547  | 85,662                                   | 7,126                            | 16,611   | 85,606  |
| Okla.         | 6,240                            | 8,460   | 108,202                                  | 6,721                            | 8,601  | 100,525   |
| Ore.          | 3,794                            | 6,728   | 47,696                                   | 3,752                            | 7,032  | 49,934  |
| Penn.         | 7,738                            | 38,032  | 84,718                                   | 7,806                            | 40,498   | 87,745  |
| R.I.          | 515                              | 1,138   | 2,529                                    | 521                              | 782  | 2,266   |
| S.C.          | 4,184                            | 6,348   | 64,121                                   | 4,419                            | 7,491  | 43,394  |
| S.Dak.        | 6,272                            | 6,106   | 119,903                                  | 6,273                            | 6,611  | 101,393   |
| Tenn.         | 4,552                            | 7,261   | 69,713                                   | 4,435                            | 7,306  | 62,856  |
| Texas         | 12,782                           | 20,955  | 225,289                                  | 14,344                           | 22,121   | 188,229   |
| Utah          | 2,160                            | 5,129   | 23,174                                   | 2,231                            | 5,106  | 21,959  |
| Vt.           | 1,036                            | 1,766   | 14,056                                   | 1,036                            | 1,753  | 13,431  |
| Va.           | 4,342                            | 9,215   | 47,163                                   | 4,694                            | 9,106  | 45,734  |
| Wash.         | 3,341                            | 3,372   | 42,929                                   | 3,357                            | 6,279  | 49,012  |
| W.Va.         | 2,242                            | 33,678  | 33,634                                   | 2,295                            | 4,802  | 34,352  |
| Wis.          | 5,640                            | 10,011  | 84,112                                   | 5,641                            | 10,001   | 82,283  |
| Wyo.          | 5,563                            | 3,568   | 37,453                                   | 3,559                            | 4,008  | 23,352  |
| TOTAL         | 219,735                          | 444,765   | 3,033,713                                | 225,091                          | 425,858  | 2,936,228   |
| Hawaii        | 539                              |   |  | 623                              |  |   |
| Puerto Rico   | 858                              |   |  | 1,152                            |  |   |
| Dist. of Col. |                                  |   |  | 81                               |  |   |

1/ State system only.

Federal Motor Vehicle Taxes and Federal Aid—Up to Feb. 28, 1932 the total collections on Federal taxes on motor vehicles amounted to \$2,393,710,119. The total expenditures, regular and emergency Federal aid, to Feb. 28, 1937 amounted to \$2,344,072,268.

FEDERAL AID HIGHWAY SYSTEM  
Construction—1921 to 1937 Used as a Base for Comparison With  
Estimated Future Construction—1938 to 1960  
Source: Hearings on H.R. 8838—75th CongressFEDERAL AID HIGHWAY SYSTEM  
Existing Development 1921-1937 and Estimated Future  
Development 1938-1960  
Source: Hearings on HR8838—75th Congress

## MILES OF IMPROVED HIGHWAYS EXCEEDING 2-LANE WIDTHS, OCT. 1, 1939

Includes Miles Through Municipalities Built by the States

Source: American Association of State Highway Officials in Hearings on H. R. 7891

| State | 2-Lane Miles             |                     |                     |       | 4-Lane Miles             |                     |                     |       | 6-Lane Miles             |                     |                     |       | Grand Total |
|-------|--------------------------|---------------------|---------------------|-------|--------------------------|---------------------|---------------------|-------|--------------------------|---------------------|---------------------|-------|-------------|
|       | Portland Cement Concrete | Bituminous Concrete | Other Type Pavement | Total | Portland Cement Concrete | Bituminous Concrete | Other Type Pavement | Total | Portland Cement Concrete | Bituminous Concrete | Other Type Pavement | Total |             |
| Ala.  |                          | 4                   |                     | 4     |                          |                     |                     |       |                          |                     |                     |       | 13          |
| Ark.  | 57                       | 25                  |                     | 82    |                          |                     |                     |       |                          |                     |                     |       | 116         |
| Cal.  | 227                      | 182                 | 74                  | 483   | 164                      | 21                  | 144                 | 329   | 16                       | 5                   | 15                  | 36    | 878         |
| Col.  |                          |                     |                     |       | 13                       |                     | 10                  | 23    |                          |                     |                     |       | 35          |
| Conn. |                          | 3                   | 4                   | 7     | 45                       |                     | 2                   | 47    |                          |                     |                     |       | 96          |
| Del.  | 32                       | 22                  | 40                  | 94    | 108                      |                     | 17                  | 125   |                          |                     |                     |       | 250         |
| Fla.  | 11                       | 18                  | 21                  | 50    | 22                       |                     | 13                  | 35    |                          |                     |                     |       | 66          |
| Ga.   |                          |                     |                     |       | 6                        |                     | 2                   | 8     |                          |                     |                     |       | 14          |
| Ide.  |                          |                     |                     |       | 4                        |                     |                     | 4     |                          |                     |                     |       | 8           |
| Ill.  | 47                       | 6                   | 7                   | 60    | 58                       |                     | 68                  | 126   | 23                       |                     |                     |       | 149         |
| Ind.  | 97                       | 6                   |                     | 103   | 127                      |                     | 48                  | 175   |                          |                     |                     |       | 233         |
| Ia.   | 78                       | 34                  | 35                  | 147   | 38                       |                     | 31                  | 178   | 5                        |                     |                     |       | 213         |
| Kan.  |                          |                     |                     |       | 1                        |                     |                     | 1     |                          |                     |                     |       | 2           |
| Ky.   | 28                       |                     | 21                  | 49    | 50                       |                     | 26                  | 75    |                          |                     |                     |       | 125         |
| La.   | 9                        | 3                   | 11                  | 23    | 74                       |                     | 16                  | 90    |                          |                     |                     |       | 113         |
| Me.   | 48                       |                     |                     | 48    |                          |                     |                     |       |                          |                     |                     |       | 48          |
| Ma.   | 16                       | 23                  | 12                  | 51    | 61                       |                     | 51                  | 114   |                          |                     |                     |       | 155         |
| Mass. | 67                       | 25                  | 260                 | 352   | 91                       |                     | 14                  | 443   | 20                       |                     |                     |       | 523         |
| Mich. | 201                      | 40                  | 32                  | 273   | 306                      |                     | 30                  | 609   | 24                       |                     |                     |       | 768         |
| Minn. | 95                       | 9                   |                     | 104   | 12                       |                     | 12                  | 24    |                          |                     |                     |       | 36          |
| Miss. |                          |                     | 1                   | 1     | 11                       |                     | 3                   | 14    |                          |                     |                     |       | 28          |
| Mo.   | 11                       |                     |                     | 11    | 16                       |                     |                     | 27    |                          |                     |                     |       | 43          |
| Mt.   |                          |                     |                     |       | 10                       |                     |                     | 10    |                          |                     |                     |       | 20          |
| Nebr. | 1                        | 1                   | 10                  | 12    | 1                        |                     |                     | 12    |                          |                     |                     |       | 24          |
| N.H.  | 18                       |                     |                     | 18    |                          |                     |                     |       |                          |                     |                     |       | 18          |
| N.J.  | 186                      | 12                  | 1                   | 201   | 238                      |                     | 150                 | 388   | 4                        |                     |                     |       | 466         |
| N.M.  |                          |                     |                     |       |                          |                     |                     |       |                          |                     |                     |       |             |
| N.Y.  | 775                      | 82                  | 69                  | 926   | 280                      |                     | 44                  | 1,206 | 17                       |                     |                     |       | 1,509       |
| N.C.  | 24                       | 36                  | 1                   | 61    | 17                       |                     | 2                   | 74    |                          |                     |                     |       | 101         |
| N.D.  |                          |                     |                     |       |                          |                     |                     |       |                          |                     |                     |       |             |
| Ohio  | 133                      | 80                  | 171                 | 384   | 60                       |                     | 22                  | 444   |                          |                     |                     |       | 514         |
| Okl.  | 2                        |                     |                     | 2     |                          |                     |                     |       |                          |                     |                     |       | 2           |
| Ore.  |                          |                     |                     |       | 10                       |                     | 23                  | 33    |                          |                     |                     |       | 56          |
| Penn. | 290                      | 153                 | 462                 | 905   | 107                      |                     | 1                   | 1,012 | 4                        |                     |                     |       | 1,260       |
| R.I.  |                          |                     |                     |       | 5                        |                     | 34                  | 39    |                          |                     |                     |       | 73          |
| S.C.  | 14                       | 55                  | 35                  | 104   | 58                       |                     | 31                  | 135   |                          |                     |                     |       | 166         |
| S.D.  |                          |                     |                     |       | 2                        |                     |                     | 2     |                          |                     |                     |       | 4           |
| Tenn. | 10                       | 6                   | 2                   | 18    | 75                       |                     | 9                   | 94    |                          |                     |                     |       | 112         |
| Texas | 44                       | 131                 | 179                 | 354   | 22                       |                     | 22                  | 376   |                          |                     |                     |       | 466         |
| Utah  | 16                       | 6                   | 1                   | 23    | 18                       |                     | 7                   | 31    |                          |                     |                     |       | 59          |
| Vt.   |                          |                     |                     |       |                          |                     |                     |       |                          |                     |                     |       |             |
| Va.   | 66                       | 178                 | 71                  | 315   | 43                       |                     | 20                  | 358   |                          |                     |                     |       | 408         |
| Wash. | 5                        | 3                   |                     | 8     | 99                       |                     | 67                  | 107   |                          |                     |                     |       | 115         |
| W.Va. | 32                       | 17                  | 46                  | 95    | 11                       |                     | 8                   | 114   |                          |                     |                     |       | 125         |
| Wis.  | 163                      | 18                  | 1                   | 182   | 94                       |                     | 48                  | 226   |                          |                     |                     |       | 274         |
| Wyo.  |                          |                     |                     |       |                          |                     |                     |       |                          |                     |                     |       |             |
| Total | 2842                     | 1108                | 1538                | 5488  | 356                      | 829                 | 711                 | 5106  | 176                      | 47                  | 160                 | 383   | 10638       |

## NOTES

## MILES OF IMPROVED HIGHWAYS EXCEEDING 2-LANE WIDTHS, OCT. 1, 1939. INCLUDES MILES THROUGH MUNICIPALITIES BUILT BY STATE

- In addition to this there are 7 miles of 5-lane, 2 miles of 7-lane and 1 mile of 8-lane roads.
- In addition to this there are 74 miles of 5-lane, 49 miles of 7-lane, and 4 miles of 8-lane roads.
- State-constructed highways in municipalities are omitted from these figures.
- In addition to this there are 6 miles of divided 7-lane roads.
- In addition to this there are 7 miles of 5-lane, 49 miles of 7-lane, and 4 miles of 8-lane roads.
- In addition to this there is 1 mile of 5-lane road.
- In addition to this there are 11 miles of 5-lane and 1 mile of 8-lane roads—all divided.
- In addition to this there are 40 miles of 5-lane and 11 miles of 8-lane roads.
- In addition to this there are 1 mile of 5-lane and 5 miles of 8-lane roads—all divided.
- In addition to this there are 10 miles of 5-lane and 22 miles of 8-lane roads.
- Including duals.
- In addition to this there is 1 mile of 5-lane road.
- Montana and Wyoming have no roads exceeding 2-lane widths.
- In addition to this there are 12 miles of 5-lane roads.
- In addition to this there are 3 miles of 5-lane roads.
- In addition to this there are 16 miles of 5-lane roads.
- In addition to this there are 20 miles of 5-lane roads and 3 miles of 8-lane roads.
- There are also 7 miles of 5-lane roads.
- In addition to this there are 2 miles of 5-lane roads.
- In addition to this there are 3 miles of 5-lane roads.
- In addition to this there are 89 miles of 4-lane roads, dual type (concrete and soil and concrete and macadam, of which 9 miles are divided).
- In addition to this there are 9 miles of 5-lane roads and 6 miles of 8-lane roads.
- In addition to this there are 4 miles of 5-lane roads.

The mileages shown in these notes makes the grand total, 11,070 miles.

BLUE RIDGE AND NATCHEZ TRACE PARKWAYS  
MILEAGE CONSTRUCTION STATUS AS OF FEB. 15, 1940

Source: Hearings on H. R. 7891—76th Congress

| Parkway        | Roadway completed, ready for use. | Grading completed or advertised or under contract. | Bituminous surfacing completed or under contract. | Total completed or advertised or under contract. | Remaining to be started. | Total parkway mileage |
|----------------|-----------------------------------|--|---|--|--------------------------|-----------------------|
| Blue Ridge:    |                                   |  |   |  |                          |                       |
| North Carolina | 59.45                             | 86.23  | 59.45   | 145.68   | 109.12                   | 254.80                |
| Virginia       | 89.48                             | 69.32  | 89.48   | 158.80   | 71.20                    | 230.00                |
| Total          | 148.93                            | 155.55   | 148.93  | 304.48   | 180.32                   | 484.80                |
| Natchez Trace: |                                   |  |   |  |                          |                       |
| Alabama        | 0                                 | 0  | 0   | 0  | 53.60                    | 53.60                 |
| Mississippi    | 24.30                             | 40.20  | 36.10   | 76.30  | 235.30                   | 311.60                |
| Tennessee      | 0                                 | 9.30   | 0   | 9.30   | 100.50                   | 109.80                |
| Total          | 24.30                             | 49.50  | 36.10   | 85.60  | 369.40                   | 455.00                |
| Grand Total    | 173.23                            | 205.05   | 185.03  | 390.08   | 549.72                   | 939.80                |

**Car Ownership in Rural and Urban Areas**—In Michigan 19 per cent of the state total of cars is owned in rural areas. The rural population is 26 per cent and the rural valuation 20 per cent of the state total, while the revenues originating from rural residents is 15 per cent of the state total. In the rural areas there is one car to every 5.5 persons. In the urban areas there is one car to every 3.6 persons.

ANALYSIS OF NET CHANGE IN NUMBER OF GRADE CROSSINGS, 1926-1938, INCLUSIVE  
Railway With Highway (Class I Line-Haul Railways and Switching and Terminal Companies)

Source: Hearings on H. R. 7891—76th Congress

| Year ended— | Number at beginning of year | Number at end of year | Net increase or decrease | Analysis of net increase   |                                 |                                      |   |
|-------------|-----------------------------|-----------------------|--------------------------|----------------------------|---------------------------------|--------------------------------------|---|
|             |                             |                       |                          | Actually added during year | Actually eliminated during year | Net of actually added and eliminated | Added or eliminated due to change in description, recount, etc. |
| 1926        | 222,701                     | 225,158               | 2,457                    | 1,976                      | 1,254                           | 622                                  | 234   |
| 1927        | 223,231                     | 226,282               | 3,051                    | 1,959                      | 1,291                           | 618                                  | 434   |
| 1928        | 228,392                     | 240,089               | 11,697                   | 2,068                      | 1,204                           | 864                                  | 833   |
| 1929        | 241,341                     | 242,809               | 1,468                    | 1,945                      | 1,297                           | 648                                  | 920   |
| 1930        | 245,292                     | 245,672               | 380                      | 1,948                      | 1,568                           | 380                                  | 87  |
| 1931        | 243,228                     | 238,017               | -5,211                   | 1,265                      | 1,644                           | -379                                 | -4,819  |
| 1932        | 237,369                     | 237,038               | -334                     | 815                        | 1,447                           | -632                                 | 298   |
| 1933        | 227,133                     | 235,827               | 8,694                    | 799                        | 2,029                           | -1,241                               | -115  |
| 1934        | 225,486                     | 234,629               | 9,143                    | 999                        | 2,159                           | -1,160                               | -581  |
| 1935        | 225,191                     | 234,231               | 9,040                    | 867                        | 2,071                           | -1,204                               | 219   |
| 1936        | 224,286                     | 232,902               | 8,616                    | 491                        | 2,134                           | -1,643                               | 279   |
| 1937        | 223,111                     | 232,322               | 9,211                    | 895                        | 1,543                           | -648                                 | 159   |
| 1938        | 222,351                     | 231,400               | 9,049                    | 641                        | 1,805                           | -1,164                               | 253   |

1 From Interstate Commerce Commission, Statistics of Railways in the United States, statement No. 48, sep. C, 1938 ed., and table 12, 1938 ed.

## MILEAGE OF IMPROVEMENTS ON SECONDARY ROADS BY CALENDAR YEARS

Source: Hearings on H. R. 7891—76th Congress

| Year | Miles   |       |       | Year | Miles   |       |       |
|------|---------|-------|-------|------|---------|-------|-------|
|      | Initial | Stage | Total |      | Initial | Stage | Total |
| 1933 | 6,755   | 106   | 6,861 | 1937 | 1,372   | 461   | 1,833 |
| 1934 | 4,280   | 254   | 4,534 | 1938 | 3,412   | 506   | 3,918 |
| 1935 | 6,095   | 575   | 6,670 | 1939 | 2,413   | 301   | 2,714 |
| 1936 | 4,902   | 262   | 5,164 |      |         |       |       |



**STATUS OF IMPROVEMENT OF ALL RURAL HIGHWAYS, July 1, 1939**  
Includes State Routes Through Cities and Mileages Under Contract as of Same Date  
Sources: American Association of State Highway Officials in Hearings on H. R. 7891

| State               | State roads     |                   |                |                |            |         | County roads    |                   |                |                |            |           | Township (or town) roads |                   |                |                |            |         | Grand total miles of road in State |
|---------------------|-----------------|-------------------|----------------|----------------|------------|---------|-----------------|-------------------|----------------|----------------|------------|-----------|--------------------------|-------------------|----------------|----------------|------------|---------|------------------------------------|
|                     | High type miles | Medium type miles | Low type miles | Earth improved | Unimproved | Total   | High type miles | Medium type miles | Low type miles | Earth improved | Unimproved | Total     | High type miles          | Medium type miles | Low type miles | Earth improved | Unimproved | Total   |                                    |
| Alabama.....        | 1,095           | 3,240             | 1,398          | 75             | 692        | 6,500   | 261             | 381               | 27,691         | 9,362          | 17,697     | 55,392    |                          |                   |                |                |            |         | 61,892                             |
| Arizona.....        | 253             | 1,860             | 532            | 588            | 183        | 3,416   | 294             | 235               | 1,331          | 2,261          | 10,601     | 14,722    | 262                      | 125               | 618            | 1,533          | 7,616      | 10,154  | 28,292                             |
| Arkansas.....       | 1,856           | 1,137             | 5,543          | 693            | 222        | 9,351   | 76              | 75                | 6,887          | 11,176         | 27,520     | 45,734    |                          |                   |                |                |            |         | 55,085                             |
| California.....     | 5,493           | 4,989             | 2,708          | 462            | 266        | 13,918  | 5,353           | 17,769            | 17,352         | 3,623          | 42,774     | 86,901    |                          |                   |                |                |            |         | 100,819                            |
| Colorado.....       | 646             | 3,144             | 4,494          | 1,740          | 2,337      | 12,361  | 6               | 55                | 4,803          | 4,992          | 53,316     | 63,172    |                          |                   |                |                |            |         | 75,533                             |
| Connecticut.....    | 843             | 1,841             | 196            | 97             |            | 2,977   |                 |                   |                |                |            |           | 5,753                    |                   |                | 2,089          | 1,075      | 8,919   | 11,896                             |
| Delaware.....       | 1,265           | 228               | 429            | 1,930          |            | 3,852   |                 |                   |                |                |            |           |                          |                   |                |                |            |         | 3,852                              |
| Florida.....        | 1,746           | 1,746             | 3,205          | 682            | 6          | 7,372   | 528             | 3,296             | 2,188          | 12,751         | 3,157      | 21,890    |                          |                   |                |                |            |         | 29,262                             |
| Georgia.....        | 2,804           | 2,266             | 1,022          | 306            | 4,767      | 11,215  | 712             | 615               | 21,849         | 27,408         | 36,295     | 86,879    |                          |                   |                |                |            |         | 98,094                             |
| Idaho.....          | 226             | 2,485             | 1,268          | 378            | 498        | 4,855   | 6               | 84                | 3,505          | 1,898          | 8,147      | 13,640    |                          | 99                | 4,090          | 1,487          | 4,133      | 9,813   | 28,308                             |
| Illinois.....       | 10,685          | 119               | 101            | 58             |            | 10,963  | 2,400           | 698               | 11,225         | 4,078          | 58         | 18,459    | 132                      | 237               | 36,521         | 33,632         | 3,240      | 73,762  | 103,184                            |
| Indiana.....        | 5,707           | 3,078             | 994            |                |            | 9,779   | 1,298           | 3,083             | 46,417         | 16,026         |            | 66,824    |                          |                   |                |                |            |         | 76,903                             |
| Iowa.....           | 6,052           | 744               | 2,774          | 18             | 38         | 9,626   | 26              | 29                | 11,259         | 567            | 1,785      | 13,666    | 11                       | 405               | 23,695         | 2,176          | 53,390     | 79,677  | 102,969                            |
| Kansas.....         | 1,757           | 4,316             | 3,145          | 69             | 601        | 9,888   | 183             | 180               | 10,222         | 1,034          | 5,992      | 17,613    | 45                       | 61                | 10,894         | 1,009          | 80,451     | 101,460 | 128,961                            |
| Kentucky.....       | 1,834           | 3,967             | 3,531          | 158            |            | 9,490   | 132             | 2,224             | 16,099         | 3,709          | 25,408     | 47,572    |                          |                   |                |                |            |         | 57,062                             |
| Louisiana.....      | 2,666           | 1,556             | 10,180         | 3,738          | 757        | 18,897  | 39              | 151               | 3,541          | 11,511         | 5,741      | 20,983    |                          |                   |                |                |            |         | 39,880                             |
| Maine.....          | 767             | 1,964             |                |                | 109        | 2,830   | 57              | 3,099             | 2,851          |                | 1,850      | 7,867     | 15                       | 220               | 150            |                | 11,397     | 11,782  | 22,479                             |
| Maryland.....       | 2,045           | 2,099             | 303            | 13             |            | 4,260   | 194             | 2,295             | 2,531          |                | 6,109      | 11,120    |                          |                   |                |                |            |         | 17,031                             |
| Massachusetts.....  | 1,741           | 137               |                | 1              | 12         | 1,891   |                 |                   |                |                |            |           | 5,101                    | 9,865             |                | 6,659          | 800        | 16,225  | 22,899                             |
| Michigan.....       | 5,249           | 883               | 2,855          | 147            | 322        | 9,456   |                 |                   |                |                |            | 83,443    |                          |                   |                |                |            |         | 83,443                             |
| Minnesota.....      | 3,041           | 4,355             | 3,596          | 355            | 25         | 11,372  | 53              | 714               | 27,362         | 5,176          | 4,431      | 37,736    |                          |                   |                |                |            |         | 43,229                             |
| Mississippi.....    | 2,180           | 120               | 749            | 650            | 2,690      | 6,255   |                 |                   |                |                |            | 54,772    |                          |                   |                |                |            |         | 61,067                             |
| Missouri.....       | 4,316           | 2,315             | 8,505          | 323            |            | 15,459  | 377             | 1,140             | 21,623         | 30,455         | 45,729     | 99,324    |                          |                   |                |                |            |         | 114,783                            |
| Montana.....        | 2,954           | 1,534             | 803            | 237            | 782        | 6,310   |                 |                   | 5,446          | 3,153          | 50,820     | 59,419    |                          |                   |                |                |            |         | 65,729                             |
| Nebraska.....       | 2,985           | 90                | 5,329          | 367            | 2,409      | 11,190  | 71              | 363               | 7,121          | 5,019          | 52,075     | 64,679    |                          |                   |                |                |            |         | 100,071                            |
| Nevada.....         | 70              | 2,470             | 369            | 166            | 1,965      | 5,770   |                 | 79                | 259            | 702            | 17,260     | 18,300    |                          |                   |                |                |            |         | 23,370                             |
| New Hampshire.....  | 326             | 3,069             | 153            |                |            | 3,548   |                 |                   |                |                |            |           | 2                        | 1,302             | 2,671          | 4,874          | 1,106      | 10,045  | 13,593                             |
| New Jersey.....     | 1,456           | 354               |                | 54             | 1,062      | 1,625   | 1,209           | 2,745             | 98             | 50             | 5,727      | 1,105     |                          | 2,293             | 4,385          | 357            | 7,929      | 16,059  | 23,448                             |
| New Mexico.....     | 2,481           | 139               | 1,459          | 1,258          | 7,350      | 12,947  |                 |                   |                |                |            |           |                          |                   |                |                |            |         | 12,947                             |
| New York.....       | 11,828          | 823               | 523            | 23             | 57         | 12,731  | 9,638           | 2,252             | 2,893          | 1,279          |            | 16,062    | 2,436                    | 343               | 5,772          | 17,654         | 29,272     | 55,477  | 84,270                             |
| North Carolina..... | 6,083           | 3,919             | 1,750          | 431            | 49         | 11,232  | 582             | 869               | 19,078         | 22,368         | 4,205      | 47,102    |                          |                   |                |                |            |         | 68,334                             |
| North Dakota.....   | 25              | 1,285             | 4,589          | 667            | 481        | 7,047   |                 | 9                 | 6,498          | 6,003          | 7,715      | 20,135    |                          |                   |                |                |            |         | 109,861                            |
| Ohio.....           | 7,610           | 1,331             | 7,537          | 133            |            | 16,611  | 2,085           | 9,940             | 14,792         | 516            | 256        | 27,589    | 152                      | 5,904             | 22,882         | 4,684          | 12,625     | 65,390  | 82,679                             |
| Oklahoma.....       | 2,867           | 1,168             | 3,219          | 1,347          |            | 8,601   | 238             | 194               | 7,762          | 63,801         | 19,929     | 91,924    |                          |                   |                |                |            |         | 85,806                             |
| Oregon.....         | 2,151           | 2,710             | 1,212          | 526            | 433        | 7,032   | 439             | 598               | 12,852         | 14,492         | 14,521     | 42,902    |                          |                   |                |                |            |         | 100,525                            |
| Pennsylvania.....   | 15,405          | 1,394             | 13,873         |                |            | 9,826   | 40,498          |                   |                |                |            | 10,047    |                          |                   |                |                |            |         | 49,934                             |
| Rhode Island.....   | 531             | 251               |                |                |            | 782     |                 |                   |                |                |            |           | 80                       | 538               | 623            | 147            | 96         | 1,484   | 2,266                              |
| South Carolina..... | 2,545           | 3,492             | 632            |                | 822        | 7,491   | 106             | 890               | 6,166          | 10,061         | 18,687     | 35,880    |                          | 2                 | 7              | 3              | 11         | 23      | 43,394                             |
| South Dakota.....   | 1,074           | 190               | 4,310          | 978            | 39         | 6,611   | 3               | 2                 | 8,729          | 9,459          | 852        | 19,045    |                          | 3                 | 5,683          | 30,491         | 39,560     | 75,737  | 101,393                            |
| Tennessee.....      | 2,694           | 2,189             | 2,388          | 35             |            | 7,306   | 1,601           | 30,912            | 2,013          | 6,197          | 14,827     | 55,550    |                          |                   |                |                |            |         | 62,856                             |
| Texas.....          | 15,967          | 1,548             | 794            | 1,759          | 2,033      | 22,121  | 731             | 4,019             | 22,065         | 13,731         | 125,562    | 166,108   |                          |                   |                |                |            |         | 188,229                            |
| Utah.....           | 429             | 1,456             | 2,279          | 606            | 336        | 5,106   | 15              | 223               | 2,583          | 2,314          | 9,449      | 14,594    | 1                        | 46                | 642            | 732            | 848        | 2,269   | 21,959                             |
| Vermont.....        | 863             | 271               | 619            |                |            | 1,753   | 64              | 139               | 2,145          | 139            | 11         | 2,498     | 2                        | 32                | 2,824          | 4,245          | 2,077      | 9,180   | 13,431                             |
| Virginia.....       | 3,509           | 4,155             | 525            | 65             | 849        | 9,106   | 810             | 3,610             | 16,445         | 9,853          | 5,449      | 36,197    | 390                      |                   | 32             | 7              | 12         | 431     | 45,734                             |
| Washington.....     | 2,107           | 2,851             | 1,021          | 211            | 89         | 6,279   | 500             | 792               | 18,074         | 13,018         | 10,419     | 42,733    |                          |                   |                |                |            |         | 49,012                             |
| West Virginia.....  | 2,301           | 1,713             | 435            | 123            | 230        | 4,803   | 805             | 1,265             | 6,650          | 942            | 19,888     | 29,650    |                          |                   |                |                |            |         | 34,352                             |
| Wisconsin.....      | 4,724           | 2,368             | 2,879          |                |            | 10,001  | 777             | 1,324             | 11,216         | 1,021          | 9          | 14,346    | 254                      | 822               | 34,984         | 18,135         | 3,741      | 57,936  | 82,283                             |
| Wyoming.....        | 27              | 3,152             | 331            | 187            | 311        | 4,008   |                 | 30                | 554            | 923            | 17,837     | 19,344    |                          |                   |                |                |            |         | 23,352                             |
| Total.....          | 156,305         | 94,633            | 111,745        | 21,560         | 41,560     | 425,858 | 32,117          | 94,773            | 414,742        | 331,176        | 696,360    | 1,608,430 | 15,763                   | 21,392            | 186,149        | 177,804        | 362,951    | 811,940 | 2,936,228                          |

<sup>1</sup> As of December 31, 1937.

<sup>2</sup> All figures given are approximate estimates.

<sup>3</sup> This includes medium type and low type miles.

<sup>4</sup> Excludes city streets (1,864 miles).

<sup>5</sup> All figures based on 1936 inventory.

<sup>6</sup> This tabulation does not include mileages under contract.

<sup>7</sup> County roads as of January 1, 1938.

<sup>8</sup> As of January 1, 1939.

<sup>9</sup> Includes "Low Type."

<sup>10</sup> As of January 1, 1937.

<sup>11</sup> State System only.

<sup>12</sup> County roads as of December 31, 1936.

<sup>13</sup> Township roads included under "county" mileage.

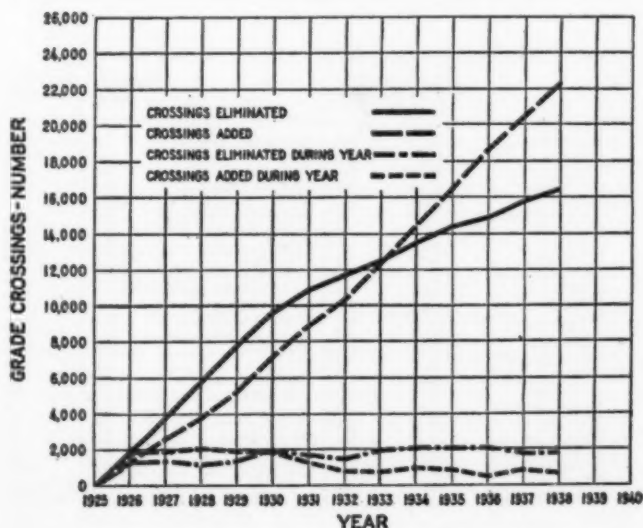
<sup>14</sup> Does not include State routes through cities.

<sup>15</sup> According to 1937 Planning Survey figures.

<sup>16</sup> Breakdown not available.

**RAILROAD-HIGHWAY GRADE CROSSINGS ADDED AND ELIMINATED—CLASS I STEAM RAILWAYS**

Source: I. C. C. Statistics of Railways in the United States



**STATE HIGHWAY MILEAGE—1937**

Existing Mileage of Municipal Streets Forming Urban Extensions of State Highway Systems

Source: Public Roads Administration, Issued December, 1939

|  |        |
|--|--------|
| Mileage of Streets Connecting State Highway System |        |
| Total.....   | 23,484 |
| Mileage Not Segregated.....                        | 1,239  |
| Mileage Reported Separately:                       |        |
| Urban extensions under state control.....          | 18,990 |
| Connecting streets not under state control.....    | 3,255  |
| Total.....   | 22,245 |
| Classification of Mileage                          |        |
| Nonsurfaced Mileage                                |        |
| Total.....   | 513    |
| Unimproved.....                                    | 186    |
| Graded and drained.....                            | 327    |
| Surfaced Mileage Classified By Types               |        |
| Total.....   | 21,732 |
| Soil-surfaced.....                                 | 65     |
| Gravel or Stone.....                               | 1,300  |
| Bituminous surface treated.....                    | 2,068  |
| Mixed bituminous.....                              | 1,477  |
| Bituminous penetration.....                        | 968    |
| Bituminous concrete and sheet asphalt.....         | 4,194  |
| Portland cement concrete.....                      | 7,663  |
| Brick.....   | 1,851  |
| Block.....   | 225    |
| Dual-type.....                                     | 608    |
| Not classified by types.....                       | 1,313  |

# MILEAGE BY TYPES OF CONSTRUCTION, NUMBER OF BRIDGES, AND NUMBER OF GRADE CROSSINGS ELIMINATED OR PROTECTED ON HIGHWAY AND GRADE CROSSING PROJECTS COMPLETED DURING THE FISCAL YEAR, 1939

Source: Hearings on H. R. 7891—76th Congress

| State                     | Graded and drained | Sand-clay |         | Gravel    |         | Macadam   |         | Low-cost bituminous mix | Bituminous macadam | Bituminous concrete | Portland cement concrete | Block   | Total miles | Number of bridges | Railroad-highway grade crossings |   |                  |   |
|---------------------------|--------------------|-----------|---------|-----------|---------|-----------|---------|-------------------------|--------------------|---------------------|--------------------------|---------|-------------|-------------------|----------------------------------|---|------------------|---|
|                           |                    | Untreated | Treated | Untreated | Treated | Untreated | Treated |                         |                    |                     |                          |         |             |                   | Number eliminated                | Number separated structures reconstructed | Number protected | Number protected reconstructed and eliminated |
|                           | Miles              | Miles     | Miles   | Miles     | Miles   | Miles     | Miles   | Miles                   | Miles              | Miles               | Miles                    | Miles   |             |                   |                                  |   |                  |   |
| Alabama.....              |                    | 1.1       | 163.2   | 7.7       | 106.9   |           |         | 79.7                    |                    |                     | 0.1                      |         | 270.0       | 59                | 11                               |   | 6                | 17  |
| Arizona.....              |                    |           |         | 11.0      | 72.6    |           |         | 70.7                    |                    | 3.5                 |                          |         | 166.8       | 87                |                                  |   |                  |   |
| Arkansas.....             | 27.6               |           | 1.9     | 17.6      |         |           |         | 70.9                    |                    | 29.9                |                          |         | 153.9       | 18                | 19                               |   | 2                | 21  |
| California.....           | 18.4               |           | 1.0     | 11.5      | 37.4    |           |         | 141.8                   | 14.7               | 89.4                | 58.8                     |         | 373.0       | 80                | 5                                | 3   | 15               | 24  |
| Colorado.....             |                    |           |         | 211.2     |         |           |         |                         |                    | .3                  | .4                       |         | 211.9       | 66                | 6                                |   | 6                | 11  |
| Connecticut.....          |                    |           |         | .5        |         |           | 2.6     |                         | 2.5                |                     | 9.0                      |         | 14.4        | 4                 | 4                                |   |                  | 4   |
| Delaware.....             |                    |           |         | 5.3       |         |           |         |                         |                    | 1.7                 |                          |         | 23.3        | 2                 | 2                                |   | 23               | 25  |
| Florida.....              | 39.9               |           |         | 6.2       |         | 6.9       | 1.3     |                         |                    |                     | 28.6                     |         | 82.9        | 11                | 2                                |   | 45               | 47  |
| Georgia.....              | 2.6                | 61.7      | 68.4    | 60.4      | 129.4   |           |         |                         |                    | 16.3                |                          |         | 469.8       | 65                | 29                               | 11  | 14               | 45  |
| Idaho.....                | 7.8                |           |         | 78.2      |         |           |         | 163.3                   |                    | 1                   | 4.9                      |         | 229.3       | 9                 |                                  |   |                  | 7   |
| Illinois.....             | 142.9              | 8.0       |         | 38.2      | 8.5     | 172.7     | 9.2     |                         |                    | 113.8               |                          | 1.5     | 532.5       | 124               | 18                               |   | 24               | 42  |
| Indiana.....              | 30.7               |           |         | 37.7      |         |           |         | 39.7                    |                    | 37.0                |                          |         | 248.0       | 27                | 5                                | 4   | 53               | 62  |
| Iowa.....                 | 61.2               |           |         | .6        | 14.7    |           |         |                         |                    | 226.2               |                          |         | 292.7       | 50                | 13                               | 2   | 20               | 35  |
| Kansas.....               | 20.2               |           | 11.2    | 95.6      | 539.1   |           |         | 101.0                   |                    | 34.8                |                          |         | 801.9       | 88                | 11                               | 1   | 5                | 17  |
| Kentucky.....             | 2.3                |           |         | 128.4     |         |           |         | 91.8                    |                    | 15.3                | 96.9                     |         | 334.7       | 34                | 5                                | 3   | 36               | 44  |
| Louisiana.....            | 6.3                |           |         | 19.8      |         |           |         |                         |                    | 40.6                |                          |         | 66.7        | 15                | 5                                | 1   | 1                | 7   |
| Maine.....                |                    |           |         | .8        | 43.1    |           | 25.1    | .8                      | 12.2               | 12.0                | 5.6                      |         | 96.6        | 3                 | 3                                |   | 1                | 4   |
| Maryland.....             | 1.8                |           |         | 3.1       |         | .3        |         |                         | 6.3                | .5                  | 25.1                     |         | 38.1        | 3                 | 4                                |   | 14               | 18  |
| Massachusetts.....        | 1.9                |           |         | 1.2       |         |           |         | .6                      | 4.6                | 9.1                 | 1.9                      |         | 19.3        | 4                 | 6                                | 2   |                  | 8   |
| Michigan.....             | 17.5               |           |         | 14.0      |         |           |         | 17.3                    |                    | 17.2                | 148.8                    |         | 214.8       | 15                | 9                                | 2   | 45               | 56  |
| Minnesota.....            | 37.4               | 9.6       |         | 13.7      | 25.5    | 8.1       |         | 219.6                   |                    |                     | 46.2                     |         | 360.1       | 21                | 2                                | 1   | 4                | 7   |
| Mississippi.....          | 64.4               |           |         | .3        | 4.5     |           |         |                         |                    |                     | 252.4                    |         | 291.6       | 23                | 9                                | 1   | 4                | 14  |
| Missouri.....             | 31.3               |           |         | 92.0      | 31.5    |           |         |                         |                    | 5.7                 | 66.7                     |         | 238.6       | 83                | 9                                | 1   |                  | 10  |
| Montana.....              | 21.7               |           |         | 48.1      | 8.4     |           |         |                         |                    |                     |                          |         | 121.9       | 45                | 5                                | 2   |                  | 7   |
| Nebraska.....             | 66.8               | 117.4     | 130.1   |           | 8.0     |           |         | 11.4                    | 153.8              |                     | 59.5                     |         | 534.6       | 90                | 11                               |   |                  | 11  |
| Nevada.....               | .8                 |           |         | 101.4     |         |           |         | 169.8                   |                    |                     |                          |         | 372.0       | 4                 | 2                                | 3   | 8                | 13  |
| New Hampshire.....        |                    |           |         |           |         | 22.9      |         | 5.0                     |                    | 4.5                 | 5.2                      |         | 37.6        | 10                |                                  | 1   | 3                | 4   |
| New Jersey.....           |                    |           |         | .8        |         |           |         |                         |                    | 1.8                 | 22.1                     | .3      | 24.8        | 7                 | 6                                | 4   | 1                | 11  |
| New Mexico.....           | 24.4               |           |         | 183.6     | 15.8    |           |         | 162.7                   |                    | .2                  |                          |         | 366.1       | 52                | 7                                | 1   | 1                | 9   |
| New York.....             | 81.1               |           |         | 6.2       | 138.2   |           | 5.4     | 16.2                    | 17.3               | 33.1                | 188.3                    |         | 445.8       | 70                | 12                               | 6   | 3                | 21  |
| North Carolina.....       | 80.6               | 1.0       | 73.3    | 17.8      | 102.0   |           |         | 56.5                    |                    | 4.0                 | 95.8                     |         | 431.0       | 82                | 7                                | 5   | 8                | 20  |
| North Dakota.....         | 18.4               | 26.8      |         | 26.2      | 41.1    |           |         | 266.2                   |                    | .4                  |                          |         | 373.1       | 30                | 1                                | 2   |                  | 8   |
| Ohio.....                 | .8                 |           |         | 11.7      |         | 2.4       | .1      |                         |                    | 13.0                | 31.1                     |         | 121.6       | 25                | 23                               |   | 1                | 24  |
| Oklahoma.....             | 35.2               |           |         | 178.5     | 2.3     |           |         | 13.1                    | 6.3                | 13.0                | 69.9                     |         | 318.3       | 122               | 2                                |   | 5                | 7   |
| Oregon.....               | 8.4                |           |         | 23.1      | 130.8   |           |         | 33.2                    | 6.2                | 6.3                 | 20.6                     |         | 222.7       | 20                | 3                                | 2   |                  | 6   |
| Pennsylvania.....         |                    |           |         | 63.9      |         |           |         | 28.0                    | 61.5               | 60.0                | 56.8                     | 1.9     | 302.1       | 44                | 18                               | 5   |                  | 23  |
| Rhode Island.....         |                    |           |         |           |         |           |         | 4.2                     | 5.5                | 7.9                 | 7.5                      |         | 25.1        | 1                 |                                  |   |                  |   |
| South Carolina.....       | 11.7               | 27.2      | 215.9   |           | 69.6    |           |         | 2.5                     | 25.3               | 24.8                |                          |         | 377.0       | 35                | 15                               | 5   | 9                | 29  |
| South Dakota.....         | 93.9               |           |         | 37.7      | 92.3    |           |         | 177.0                   |                    |                     |                          |         | 360.9       | 27                | 9                                |   | 14               | 23  |
| Tennessee.....            | 4.4                |           |         | 80.2      |         |           |         |                         |                    | 61.4                | 89.6                     |         | 235.6       | 48                | 3                                | 2   | 7                | 12  |
| Texas.....                | 322.1              |           |         | 321.4     | 684.8   |           |         | 17.1                    | 128.8              | 209.8               | 15.5                     | 1,667.5 | 305         | 19                | 3                                | 8   | 6                | 65  |
| Utah.....                 | .2                 |           |         | 61.1      | 8.9     |           |         | 125.0                   |                    | 4.2                 |                          |         | 300.0       | 12                | 2                                |   | 8                | 16  |
| Vermont.....              |                    |           |         | .6        | 16.5    |           |         | 28.9                    |                    |                     | 4.3                      |         | 50.4        | 5                 |                                  | 2   | 5                | 10  |
| Virginia.....             | 5.7                | 5.6       | 72.3    | 8.9       | 88.2    | .1        | 86.7    |                         |                    | 44.5                |                          |         | 378.2       | 57                | 21                               | 3   | 6                | 83  |
| Washington.....           | 7.4                |           |         | 137.0     |         |           |         | 19.6                    |                    | 21.6                |                          |         | 182.6       | 47                | 13                               | 4   | 3                | 20  |
| West Virginia.....        | 8.8                |           |         | 6.6       |         |           |         | 22.1                    |                    | 29.8                | 19.0                     |         | 106.8       | 3                 | 11                               |   | 6                | 17  |
| Wisconsin.....            | 68.6               |           |         | 55.9      |         |           |         | 6.6                     |                    | .3                  | 89.3                     |         | 220.7       | 43                | 6                                | 1   | 23               | 80  |
| Wyoming.....              | 70.4               |           |         | 29.1      |         |           |         | 270.7                   |                    |                     |                          |         | 370.2       | 40                | 1                                | 2   | 4                | 7   |
| Hawaii.....               |                    |           |         |           |         |           | 23.0    |                         | 1.1                |                     |                          |         | 34.1        | 18                | 3                                |   |                  | 3   |
| District of Columbia..... |                    |           |         |           |         |           |         |                         |                    |                     | .2                       |         | .2          |                   |                                  | 1   |                  | 1   |
| Puerto Rico.....          |                    |           |         |           |         |           | 28.0    |                         |                    |                     |                          |         | 28.0        |                   | 6                                | 2   |                  | 2   |
| Total.....                | 1,392.3            | 245.4     | 737.3   | 2,200.7   | 2,367.7 | 183.6     | 348.0   | 2,568.1                 | 138.2              | 646.2               | 2,517.0                  | 80.3    | 13,403.8    | 2,071             | 382                              | 86  | 438              | 906   |

## TYPES OF SURFACES ON CITY STREETS

In Per Cent By Kind Of Usage

Source: Oregon State Highway Commission  
An Inventory of City Streets in Oregon, 1938

| Surface Type             | Arterial Streets or Urban Extensions of State Highways, Miles | Percent of Total | General Use Streets, Miles | Percent of Total | Special Service Streets, Miles | Percent of Total | Total    |
|--------------------------|---|------------------|----------------------------|------------------|--------------------------------|------------------|----------|
| Portland cement concrete | 76.84   | 22               | 95.61                      | 13               | 254.13                         | 13               | 426.58   |
| Bituminous:              |   |                  |                            |                  |                                |                  |          |
| Concrete base            | 26.34   | 8                | 65.30                      | 9                | 95.31                          | 5                | 186.95   |
| High type                | 154.22  | 44               | 230.86                     | 30               | 329.75                         | 17               | 704.83   |
| Low type                 | 50.63   | 15               | 68.59                      | 9                | 153.64                         | 8                | 273.05   |
| Macadam                  | 32.11   | 9                | 233.80                     | 33               | 893.65                         | 44               | 1,159.56 |
| Miscellaneous            | 5.33  | 2                | 23.74                      | 3                | 35.88                          | 2                | 64.85    |
| Graded                   | 1.08  | 0                | 19.86                      | 3                | 214.22                         | 11               | 235.10   |
| Total                    | 546.69  | 100              | 787.75                     | 100              | 1,976.58                       | 100              | 3,051.02 |
|                          | 11.4%   |                  | 23.8%                      |                  | 64.9%                          |                  | 100.0%   |

## BRIDGES CONSTRUCTED AND RAILROAD CROSSINGS ELIMINATED ON STATE HIGHWAY SYSTEMS DURING THE DECADE 1927-1936

Source: American Association of State Highway Officials in Hearings on H. R. 8838

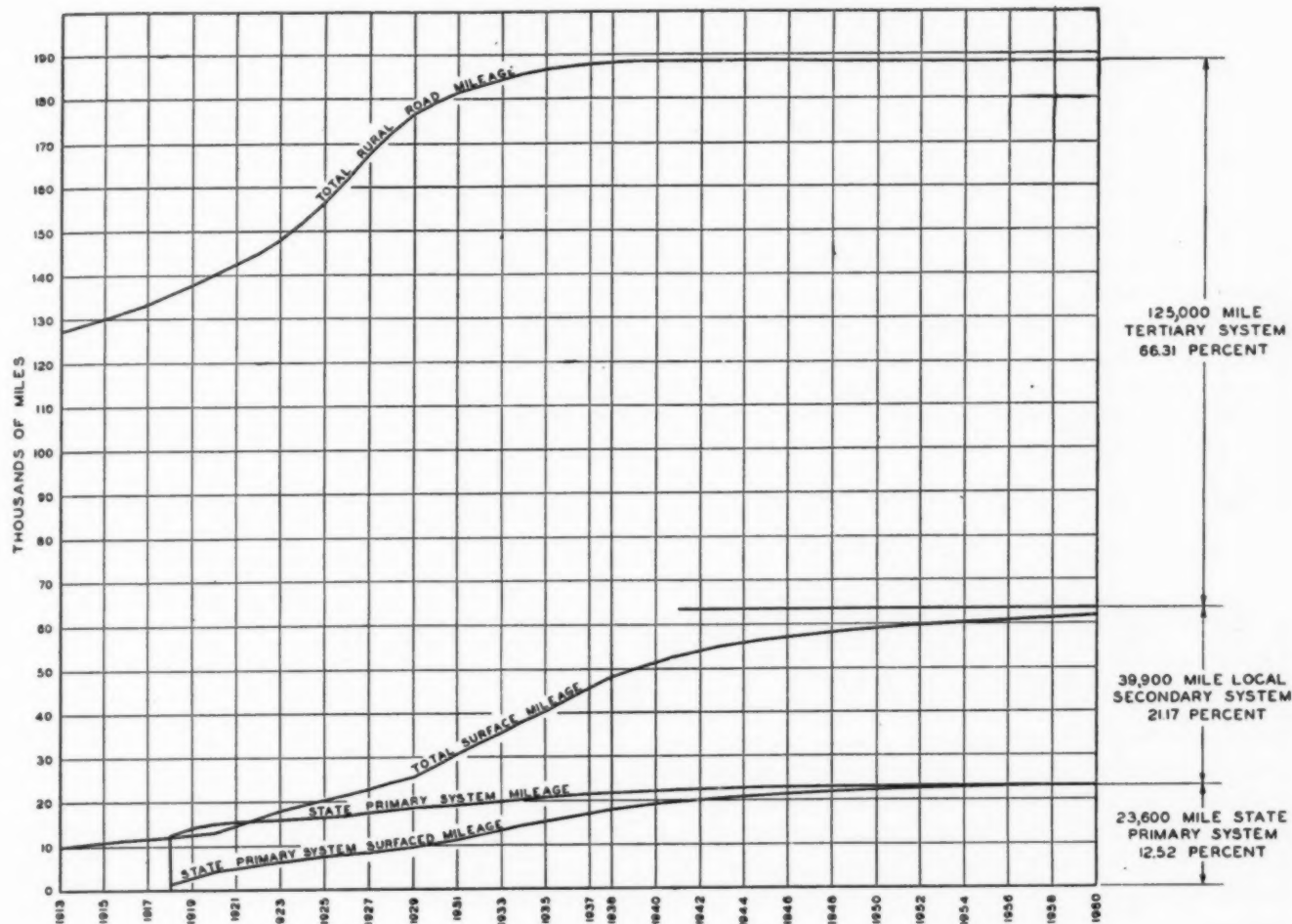
| State              | Bridges | Railroad crossings | State               | Bridges | Railroad crossings |
|--------------------|---------|--------------------|---------------------|---------|--------------------|
| Alabama.....       | 2,210   | 173                | Nevada.....         | 57      | 17                 |
| Arizona.....       | 760     | 76                 | New Hampshire.....  | 284     | 16                 |
| Arkansas.....      | 526     | 211                | New Jersey.....     | 363     | 95                 |
| California.....    | 436     | 203                | New Mexico.....     | 618     | 70                 |
| Colorado.....      | 779     | 131                | New York.....       | 3,074   | 591                |
| Connecticut.....   | 74      | 16                 | North Carolina..... | 661     | 171                |
| Delaware.....      | 51      | 8                  | North Dakota.....   | 310     | 145                |
| Florida.....       | 192     | 45                 | Ohio.....           | 1,282   | 58                 |
| Georgia.....       | 357     | 68                 | Oklahoma.....       | 1,186   | 248                |
| Idaho.....         | 175     | 73                 | Oregon.....         | 321     | 38                 |
| Illinois.....      | 2,592   | 256                | Pennsylvania.....   | 1,755   | 386                |
| Indiana.....       | 1,084   | 245                | Rhode Island.....   | 50      | 19                 |
| Iowa.....          | 1,457   | 187                | South Carolina..... | 693     | 95                 |
| Kansas.....        | 1,492   | 150                | South Dakota.....   | 352     | 24                 |
| Kentucky.....      | 1,234   | 122                | Tennessee.....      | 660     | 197                |
| Louisiana.....     | 1,635   | 70                 | Texas.....          | 433     | 166                |
| Maine.....         | 140     | 43                 | Utah.....           | 286     | 69                 |
| Maryland.....      | 251     | 68                 | Vermont.....        | 391     | 47                 |
| Massachusetts..... | 322     | 86                 | Virginia.....       | 627     | 119                |
| Michigan.....      | 351     | 206                | Washington.....     | 296     | 69                 |
| Minnesota.....     | 479     | 369                | West Virginia.....  | 200     | 17                 |
| Mississippi.....   | 750     | 214                | Wisconsin.....      | 1,125   | 244                |
| Missouri.....      | 2,951   | 546                | Wyoming.....        | 670     | 47                 |
| Montana.....       | 917     | 196                |                     |         |                    |
| Nebraska.....      | 579     | 195                | Total.....          | 38,139  | 6,938              |

Note: In 1936 There Were 3,393 Bridges Built and 858 Crossings Eliminated.

## TOTAL EXISTING STATE HIGHWAY AND LOCAL ROAD MILEAGE IN A TYPICAL STATE

Historic to 1938—Forecast to 1960

Source: Public Roads Administration



## STATE HIGHWAY MILEAGE—1937

Existing Mileage on Secondary Rural Roads Under State Control  
Source: Public Roads Administration, Issued December, 1939

## Secondary State Highways

|                                       |        |
|---------------------------------------|--------|
| Total                                 | 74,477 |
| Nonsurfaced Mileage:                  |        |
| Total                                 | 20,224 |
| Primitive                             | 311    |
| Unimproved                            | 8,144  |
| Graded and drained                    | 11,769 |
| Surfaced Mileage Classified by Types: |        |
| Total                                 | 54,253 |
| Soil-surfaced                         | 2,835  |
| Gravel or stone                       | 25,969 |
| Bituminous surface-treated            | 14,332 |
| Mixed bituminous                      | 2,308  |
| Bituminous penetration                | 5,413  |
| Bituminous concrete and sheet asphalt | 1,058  |
| Portland cement concrete              | 2,098  |
| Brick                                 | 120    |
| Block                                 | 6      |
| Dual-type                             | 66     |
| Not classified by types               | 48     |

## County Roads Under State Control

|                                       |         |
|---------------------------------------|---------|
| Total                                 | 114,454 |
| Nonsurfaced Mileage:                  |         |
| Total                                 | 67,316  |
| Primitive                             | 725     |
| Unimproved                            | 30,307  |
| Graded and drained                    | 36,284  |
| Surfaced Mileage Classified by Types: |         |
| Total                                 | 47,138  |
| Soil-surfaced                         | 23,358  |
| Gravel or stone                       | 16,816  |
| Bituminous surface-treated            | 4,401   |
| Mixed bituminous                      | 760     |
| Bituminous penetration                | 1,073   |
| Bituminous concrete and sheet asphalt | 132     |

|                          |     |
|--------------------------|-----|
| Portland cement concrete | 487 |
| Brick                    | 99  |
| Block                    | 12  |
| Dual-type                | 48  |
| Surfacing on bridges     |     |

## STATE HIGHWAY MILEAGE—1937

Summary of Existing Mileage of Public Roads  
and Streets under State Control

Source: Public Roads Administration, Issued December, 1939

## Total Existing Mileage

|  |         |
|--|---------|
| Rural Roads Under State Control                                    |         |
| Primary state highway system                                       | 327,152 |
| Secondary roads:   |         |
| Secondary state highway system                                     | 74,477  |
| County roads under state control                                   | 114,454 |
| Total  | 516,083 |
| Urban Extensions of State Highway System                           |         |
| Under state control  | 18,990  |
| Connecting streets not under state control                         | 3,255   |
| Total  | 22,245  |
| Total Mileage Under State Control                                  | 535,073 |
| Total Mileage Including Connecting Streets Not Under State Control | 538,328 |
| Surfaced Mileage   |         |
| Rural Roads Under State Control                                    |         |
| Primary state highway system                                       | 286,091 |
| Secondary roads:   |         |
| Secondary state highway system                                     | 54,253  |
| County roads under state control                                   | 47,138  |
| Total  | 387,482 |
| Urban Extensions of State Highway System                           |         |
| Under state control  | 18,491  |
| Connecting streets not under state control                         | 3,241   |
| Total  | 21,732  |
| Total Mileage Under State Control                                  | 405,973 |
| Total Mileage Including Connecting Streets Not Under State Control | 409,214 |



### RURAL HIGHWAY TRAFFIC BY VOLUME GROUPS ON SYSTEMS OF A TYPICAL STATE—1936

Source: Public Roads Administration Data

| 1936<br>Traffic<br>Volume<br>Group | Federal Aid               |                        | Other State               |                        | Total State               |                        | County                    |                        | Total Rural               |                        |
|------------------------------------|---------------------------|------------------------|---------------------------|------------------------|---------------------------|------------------------|---------------------------|------------------------|---------------------------|------------------------|
|                                    | Daily<br>Vehicle<br>Miles | Percent<br>of<br>Total | Daily<br>Vehicle<br>Miles | Percent<br>of<br>Total | Daily<br>Vehicle<br>Miles | Percent<br>of<br>Total | Daily<br>Vehicle<br>Miles | Percent<br>of<br>Total | Daily<br>Vehicle<br>Miles | Percent<br>of<br>Total |
| 1500-over                          | 6,102,467                 | 48.08                  | 474,490                   | 13.76                  | 6,576,957                 | 40.75                  | 391,910                   | 6.12                   | 6,968,867                 | 30.91                  |
| 1000-1499                          | 2,672,782                 | 21.06                  | 503,446                   | 14.60                  | 3,176,228                 | 19.68                  | 229,047                   | 3.56                   | 3,404,275                 | 15.10                  |
| 750-999                            | 1,458,245                 | 11.49                  | 393,254                   | 11.40                  | 1,851,499                 | 11.47                  | 189,568                   | 2.98                   | 2,041,067                 | 9.05                   |
| 500-749                            | 1,464,783                 | 11.70                  | 624,801                   | 18.12                  | 2,109,584                 | 13.07                  | 286,349                   | 4.47                   | 2,395,933                 | 10.63                  |
| 400-499                            | 385,745                   | 3.04                   | 352,402                   | 10.22                  | 738,147                   | 4.57                   | 182,371                   | 2.96                   | 920,518                   | 4.08                   |
| 300-399                            | 237,791                   | 1.87                   | 364,416                   | 11.15                  | 622,207                   | 3.85                   | 323,927                   | 5.06                   | 946,134                   | 4.20                   |
| 200-299                            | 229,563                   | 1.80                   | 387,739                   | 11.24                  | 617,102                   | 3.82                   | 534,393                   | 8.34                   | 1,151,495                 | 5.10                   |
| 100-199                            | 102,546                   | 0.81                   | 269,946                   | 7.83                   | 372,292                   | 2.31                   | 1,097,866                 | 17.14                  | 1,470,158                 | 6.52                   |
| 50-99                              | 16,413                    | 0.13                   | 49,183                    | 1.43                   | 65,596                    | 0.41                   | 1,239,500                 | 19.35                  | 1,305,095                 | 5.79                   |
| 0-49                               | 3,106                     | 0.02                   | 8,616                     | 0.25                   | 11,922                    | 0.07                   | 1,931,135                 | 30.15                  | 1,943,057                 | 8.62                   |
| Total                              | 12,693,041                | 100.00                 | 3,448,493                 | 100.00                 | 16,141,534                | 100.00                 | 6,405,066                 | 100.00                 | 22,546,600                | 100.00                 |
| Percent                            | 56.30                     |                        | 15.29                     |                        | 71.59                     |                        | 28.41                     |                        | 100.00                    |                        |
| Percent of State                   | 78.64                     |                        | 21.36                     |                        | 100.00                    |                        |                           |                        |                           |                        |

### RURAL HIGHWAY MILEAGE BY VOLUME GROUPS ON SYSTEMS OF A TYPICAL STATE—1936

Source: Public Roads Administration Data

| 1936<br>Traffic<br>Volume<br>Group | Federal Aid |                        | Other State |                        | Total State |                        | County     |                        | Total Rural |                        |
|------------------------------------|-------------|------------------------|-------------|------------------------|-------------|------------------------|------------|------------------------|-------------|------------------------|
|                                    | Miles       | Percent<br>of<br>Total | Miles       | Percent<br>of<br>Total | Miles       | Percent<br>of<br>Total | Miles      | Percent<br>of<br>Total | Miles       | Percent<br>of<br>Total |
| 1500-over                          | 2,479.95    | 20.09                  | 212.47      | 2.51                   | 2,692.42    | 12.94                  | 162.17     | 0.10                   | 2,854.59    | 1.56                   |
| 1000-1499                          | 2,176.96    | 17.64                  | 415.05      | 4.90                   | 2,592.01    | 12.46                  | 190.03     | 0.12                   | 2,782.04    | 1.51                   |
| 750-999                            | 1,713.67    | 13.88                  | 442.91      | 5.23                   | 2,156.58    | 10.36                  | 225.54     | 0.14                   | 2,382.12    | 1.30                   |
| 500-749                            | 2,396.03    | 19.41                  | 1,039.88    | 12.29                  | 3,435.91    | 16.51                  | 474.72     | 0.29                   | 3,910.63    | 2.14                   |
| 400-499                            | 665.47      | 7.01                   | 798.17      | 9.43                   | 1,663.64    | 8.00                   | 413.90     | 0.25                   | 2,077.54    | 1.13                   |
| 300-399                            | 691.38      | 5.60                   | 1,130.04    | 13.35                  | 1,821.42    | 8.75                   | 945.26     | 0.58                   | 2,766.68    | 1.51                   |
| 200-299                            | 940.16      | 7.62                   | 1,601.30    | 18.92                  | 2,541.46    | 12.22                  | 2,323.23   | 1.37                   | 4,764.69    | 2.60                   |
| 100-199                            | 690.52      | 5.60                   | 1,846.53    | 21.82                  | 2,537.05    | 12.19                  | 8,130.18   | 5.00                   | 10,667.23   | 5.81                   |
| 50-99                              | 234.57      | 1.90                   | 682.37      | 8.06                   | 916.94      | 4.41                   | 17,981.49  | 11.06                  | 18,898.43   | 10.31                  |
| 0-49                               | 154.23      | 1.25                   | 295.78      | 3.48                   | 450.01      | 2.16                   | 131,800.80 | 81.09                  | 132,250.81  | 72.13                  |
| Total                              | 12,342.94   | 100.00                 | 8,464.50    | 100.00                 | 20,807.44   | 100.00                 | 162,547.32 | 100.00                 | 183,354.76  | 100.00                 |
| Percent                            | 6.73        |                        | 4.62        |                        | 11.35       |                        | 80.65      |                        | 100.00      |                        |
| Percent of State                   | 59.32       |                        | 40.68       |                        | 100.00      |                        |            |                        |             |                        |

### CUMULATIVE PERCENTAGE DISTRIBUTION OF MILES AND VEHICLE-MILES OF A TYPICAL STATE—1936

Source: Public Roads Administration

| 1936<br>Traffic<br>Volume<br>Group | Federal Aid |                  | Other State |                  | Total State |                  | County |                  | Total Rural |                  |
|------------------------------------|-------------|------------------|-------------|------------------|-------------|------------------|--------|------------------|-------------|------------------|
|                                    | Miles       | Vehicle<br>Miles | Miles       | Vehicle<br>Miles | Miles       | Vehicle<br>Miles | Miles  | Vehicle<br>Miles | Miles       | Vehicle<br>Miles |
| 1500-over                          | 80.09       | 48.08            | 2.51        | 13.76            | 12.94       | 40.75            | 0.10   | 6.12             | 1.56        | 30.91            |
| 1000-1499                          | 57.73       | 69.14            | 7.41        | 28.36            | 25.40       | 60.43            | 0.22   | 9.68             | 3.07        | 46.01            |
| 750-999                            | 51.61       | 80.63            | 12.64       | 39.76            | 35.76       | 71.90            | 0.36   | 12.64            | 4.37        | 55.06            |
| 500-749                            | 71.02       | 92.33            | 24.93       | 57.88            | 53.27       | 84.97            | 0.65   | 17.11            | 6.51        | 65.69            |
| 400-499                            | 78.03       | 95.37            | 34.36       | 68.10            | 60.27       | 89.54            | 0.90   | 19.96            | 7.64        | 69.77            |
| 300-399                            | 83.63       | 97.24            | 47.71       | 79.25            | 69.08       | 93.39            | 1.48   | 25.02            | 9.15        | 73.97            |
| 200-299                            | 91.25       | 99.04            | 66.63       | 90.49            | 81.24       | 97.21            | 2.85   | 33.36            | 11.75       | 79.07            |
| 100-199                            | 96.85       | 99.85            | 88.45       | 98.32            | 93.43       | 99.52            | 7.85   | 50.50            | 17.56       | 85.59            |
| 50-99                              | 98.75       | 99.98            | 96.51       | 99.75            | 97.84       | 99.93            | 18.91  | 69.85            | 27.87       | 91.38            |
| 0-49                               | 100.00      | 100.00           | 100.00      | 100.00           | 100.00      | 100.00           | 100.00 | 100.00           | 100.00      | 100.00           |

**Motor Vehicle Casualties in 1939**—The National Safety Council estimates that 32,600 persons died from motor vehicle accidents in 1939. The non-fatal injuries totaled 1,150,000. The estimates are based on reports of city and state traffic authorities.

**63% of Travel on 10% of Roads**—Of the total travel on rural roads in Michigan 63 per cent is on the state trunk lines, which comprise 10 per cent of the total mileage. On the other hand, 37 per cent of the total travel is on the county roads, comprising 90 per cent of the rural road mileage.

**Employment from Road Construction**—A study of the labor-producing values of the various types of construction carried on by the Public Works Administrator, made by the Bureau of Labor Statistics of the United States Department of Labor, disclosed the fact that road and street construction produced more man-hours than any other type. For each \$1,000,000 spent in this type of work, 1,143,000 man-hours of labor resulted. Of this, 475,000 man-hours were direct and 668,700 were indirect. These figures confirm studies made some time ago by the Public Roads Administration showing the high labor-producing value of highway and street construction.

**Mileage of Forest-Development Road**—The total mileage on June 30, 1939, of forest-development roads for National Forest was estimated to be 114,743. Of this total 51,467 were satisfactory, 32,419 miles were unsatisfactory and 30,857 were nonexistent. It was estimated that it would require \$127,765,200 to complete construction.

**World Production of Motor Vehicles**—According to Automotive World News of June 20, 1940, the world total output of motor vehicles for 1939 is placed at 4,779,170 passenger cars, trucks and busses, an increase of 19.9 per cent as compared with the 3,983,753 units recorded during 1938. Of the total production 74.9 per cent was by the United States.

## 1938 TRUCK TRAVEL IN VEHICLE-MILES AND TON-MILES OF HAUL

Source: Public Roads Administration Data

| Truck Capacity Tons | 1938 Registration | Annual Travel Mi. Per. Vehicle | 1938 Total Travel 1000 Vehicle Miles | Average Carried Load All Trips Tons | 1938 Total Ton-Miles, 1000 |
|---------------------|-------------------|--------------------------------|--------------------------------------|-------------------------------------|----------------------------|
| 3/4 or Less         | 1,347,284         | 5,900                          | 9,949,000                            | 0.32                                | 2,544,000                  |
| 1 to 1 1/2          | 339,770           | 9,500                          | 3,228,000                            | 0.60                                | 1,937,000                  |
| 1 1/2 to 2          | 2,150,990         | 12,700                         | 27,318,000                           | 1.05                                | 28,684,000                 |
| 2 to 2 1/2          | 152,618           | 15,100                         | 2,308,000                            | 1.38                                | 3,185,000                  |
| 2 1/2 to 3 1/2      | 84,494            | 18,200                         | 1,720,000                            | 1.97                                | 3,388,000                  |
| 3 1/2 to 5          | 32,432            | 22,500                         | 730,000                              | 3.00                                | 2,190,000                  |
| 5                   | 15,764            | 25,100                         | 396,000                              | 3.77                                | 1,493,000                  |
| 5 AND OVER          | 90,480            | 29,200                         | 2,642,000                            | 5.45                                | 14,399,000                 |
| <b>TOTAL</b>        | <b>4,224,031</b>  | <b>10,960</b>                  | <b>46,291,000</b>                    | <b>1.25</b>                         | <b>57,820,000</b>          |

## 80% OF TRIPS BY TRUCK UNDER 20 MILES

Source: Public Roads, May, 1939

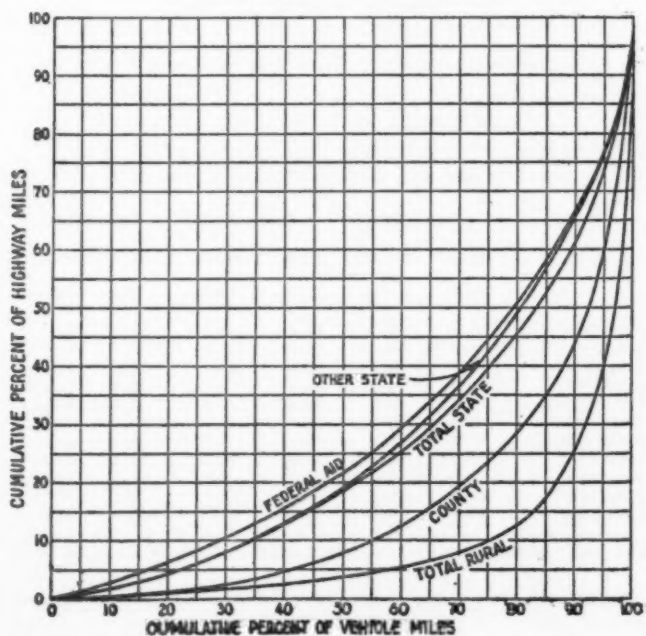
| Length of One-Way Trip From Point of Origin (Miles) | PASSENGER CARS      |            |                      | TRUCKS              |            |                      | TOTAL               |            |                      |
|---|---------------------|------------|----------------------|---------------------|------------|----------------------|---------------------|------------|----------------------|
|   | No. of Trips ('000) | Per- cent  | Cumulative Per- cent | No. of Trips ('000) | Per- cent  | Cumulative Per- cent | No. of Trips ('000) | Per- cent  | Cumulative Per- cent |
| 0 to 4.9.....                                       | 835,059             | 38.4       | 38.4                 | 184,952             | 34.0       | 34.0                 | 1,020,011           | 37.5       | 37.5                 |
| 5.0 to 9.9.....                                     | 576,295             | 26.5       | 64.9                 | 138,916             | 25.5       | 59.5                 | 715,211             | 26.3       | 63.8                 |
| 10.0 to 19.9.....                                   | 438,222             | 20.1       | 85.0                 | 113,521             | 20.8       | 80.3                 | 551,743             | 20.3       | 84.1                 |
| 20.0 to 29.9.....                                   | 143,765             | 6.6        | 91.6                 | 41,855              | 7.7        | 88.0                 | 185,620             | 6.8        | 90.9                 |
| 30.0 to 39.9.....                                   | 61,923              | 2.8        | 94.4                 | 20,030              | 3.7        | 91.7                 | 81,953              | 3.0        | 93.9                 |
| 40.0 to 49.9.....                                   | 27,784              | 1.3        | 95.7                 | 10,262              | 1.9        | 93.6                 | 38,046              | 1.4        | 95.3                 |
| 50.0 to 99.9.....                                   | 61,232              | 2.8        | 98.5                 | 23,908              | 4.4        | 98.0                 | 85,140              | 3.1        | 98.4                 |
| 100.0 to 249.9.....                                 | 25,743              | 1.2        | 99.7                 | 9,911               | 1.8        | 99.8                 | 35,654              | 1.3        | 99.7                 |
| 250.0 to 499.9.....                                 | 3,628               | .2         | 99.9                 | 1,034               | .2         | 100.0                | 4,662               | .2         | 99.9                 |
| 500.0 to 999.9.....                                 | 825                 | .1         | 100.0                | 110                 | (1)        | (1)                  | 935                 | .1         | 100.0                |
| 1,000.0 and over....                                | 489                 | (1)        | (1)                  | 45                  | (1)        | (1)                  | 534                 | (1)        | (1)                  |
| <b>Total.....</b>                                   | <b>2,174,965</b>    | <b>100</b> | <b>100</b>           | <b>544,544</b>      | <b>100</b> | <b>100</b>           | <b>2,719,509</b>    | <b>100</b> | <b>100</b>           |

(1): Less than 0.1 per cent.

Note: The data given in the above excludes trips entirely within city limits. Also, class intervals are not uniform.

## CUMULATIVE TRAFFIC DISTRIBUTION BY HIGHWAY SYSTEMS IN A TYPICAL STATE

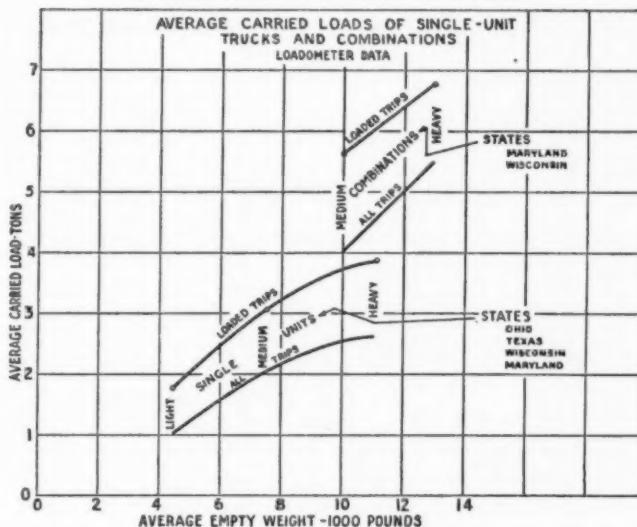
Source: Public Roads Administration



Note: See third table page 54 for data.

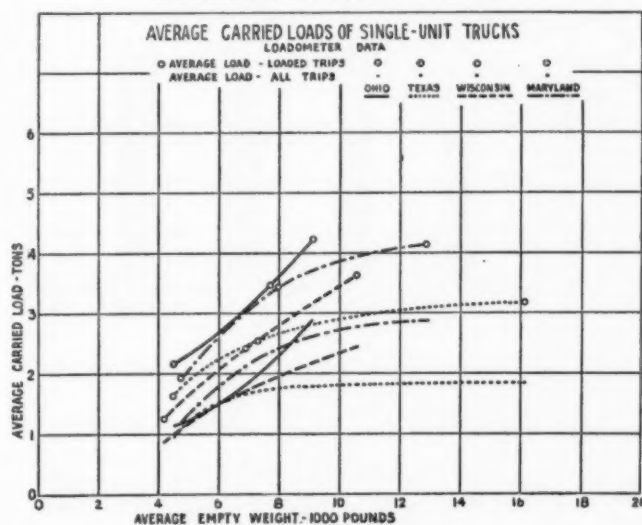
## AVERAGE CARRIED LOAD OF SINGLE-UNIT AND OTHER TRUCK COMBINATIONS IN FOUR STATES

Source: Public Roads Administration Data



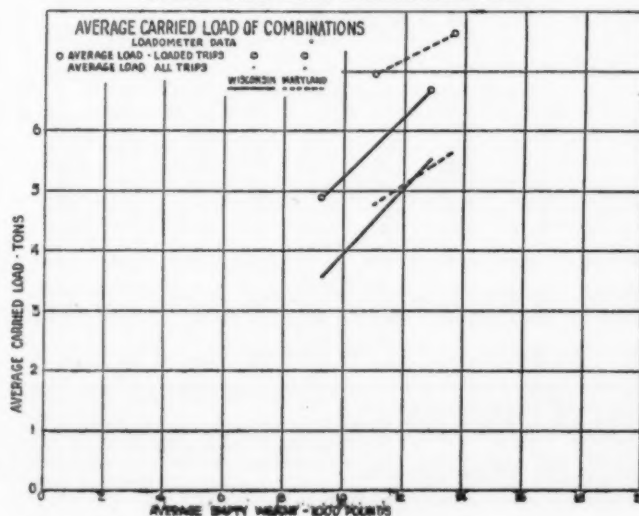
## AVERAGE CARRIED LOAD OF SINGLE-UNIT TRUCKS IN FOUR STATES

Source: Public Roads Administration Data



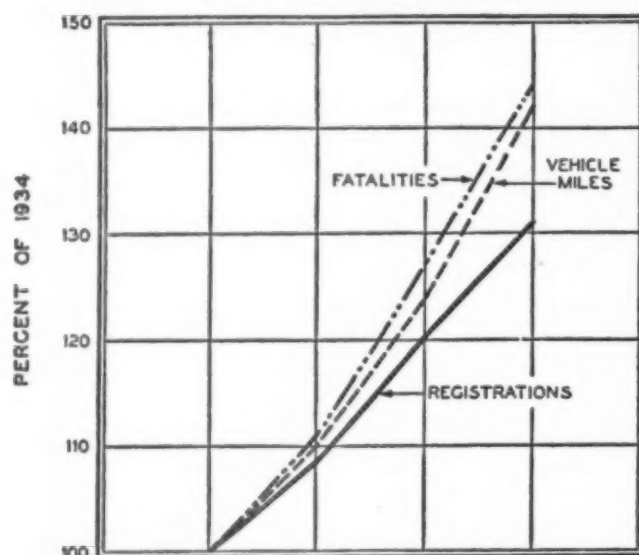
## AVERAGE CARRIED LOAD OF TRUCK COMBINATIONS WITH TRAILERS AND SEMI-TRAILERS IN TWO STATES

Source: Public Roads Administration Data

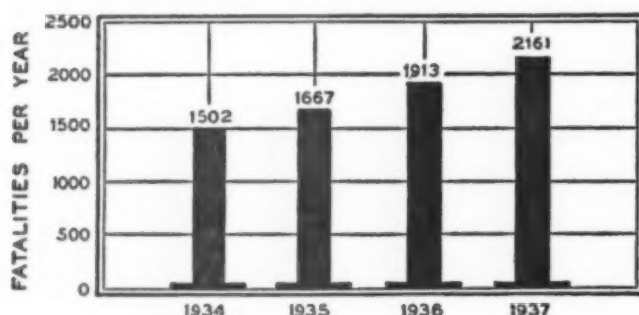


# ACCIDENTS, TRAVEL AND REGISTRATIONS IN MICHIGAN

Source: Fatality Record, Michigan Department of Health



## HIGHWAY FATALITIES PER YEAR IN MICHIGAN



## MOTOR VEHICLE DEATHS, BY TYPE AND LOCATION, 1930 TO 1939

Source: Accident Facts, 1940 Edition; National Safety Council

| Year | TOTAL DEATHS | Deaths from Collisions with— |                      |                 |             |                    |                | Deaths from Non-Collision Accidents* |
|------|--------------|------------------------------|----------------------|-----------------|-------------|--------------------|----------------|--------------------------------------|
|      |              | Pedestrians                  | Other Motor Vehicles | Railroad Trains | Street Cars | All Other Vehicles | Fixed Objects† |                                      |

### CITIES OVER 10,000 POPULATION\*

|   |        |       |       |     |     |     |     |       |
|---|--------|-------|-------|-----|-----|-----|-----|-------|
| 1934 to 1939. See Note 1 for Total Deaths. Details not available for these years. |        |       |       |     |     |     |     |       |
| 1930.....   | 13,190 | 8,530 | 2,490 | 480 | 290 | 230 | 250 | 970   |
| 1931.....   | 12,820 | 8,300 | 2,310 | 430 | 270 | 250 | 260 | 1,000 |
| 1932.....   | 11,070 | 7,150 | 2,040 | 380 | 190 | 190 | 240 | 880   |
| 1933.....   | 11,600 | 7,600 | 2,060 | 360 | 190 | 150 | 230 | 890   |
| 1934.....   | 12,500 | 8,650 | 2,390 | 370 | 200 | 240 | 240 | 1,050 |
| 1935.....   | 11,800 | 7,600 | 2,300 | 350 | 200 | 200 | 230 | 920   |
| 1936.....   | 11,900 | 8,050 | 1,950 | 350 | 200 | 200 | 210 | 840   |
| 1937.....   | 12,100 | 8,300 | 2,000 | 350 | 150 | 200 | 220 | 890   |
| 1938.....   | 9,650  | 6,200 | 1,640 | 250 | 120 | 140 | 210 | 790   |
| 1939.....   | 9,400  | 6,150 | 1,600 | 300 | 120 | 200 | 200 | 750   |

### Percentage Changes

|                |      |      |      |      |      |      |      |      |
|----------------|------|------|------|------|------|------|------|------|
| 1930 to 1939.. | -29% | -25% | -33% | -25% | -25% | -17% | -30% | -23% |
|----------------|------|------|------|------|------|------|------|------|

### RURAL AND CITIES UNDER 10,000 POPULATION\*

|   |        |       |       |       |     |     |     |       |
|---|--------|-------|-------|-------|-----|-----|-----|-------|
| 1934 to 1939. See Note 2 for Total Deaths. Details not available for these years. |        |       |       |       |     |     |     |       |
| 1930.....   | 19,720 | 4,370 | 3,430 | 1,370 | 190 | 890 | 470 | 9,000 |
| 1931.....   | 20,850 | 5,070 | 4,510 | 1,380 | 160 | 650 | 610 | 8,570 |
| 1932.....   | 18,340 | 4,940 | 4,090 | 1,140 | 130 | 540 | 560 | 7,620 |
| 1933.....   | 19,400 | 5,150 | 4,420 | 1,080 | 130 | 540 | 670 | 7,850 |
| 1934.....   | 22,200 | 5,930 | 5,830 | 1,060 | 130 | 620 | 800 | 8,800 |
| 1935.....   | 24,570 | 6,730 | 6,550 | 1,240 | 50  | 400 | 730 | 8,800 |
| 1936.....   | 26,180 | 7,200 | 7,650 | 1,350 | 70  | 600 | 850 | 8,570 |
| 1937.....   | 27,540 | 7,300 | 8,230 | 1,400 | 110 | 600 | 940 | 8,810 |
| 1938.....   | 22,580 | 6,530 | 7,230 | 1,210 | 40  | 550 | 750 | 6,800 |
| 1939.....   | 20,800 | 6,150 | 7,000 | 1,060 | 30  | 620 | 800 | 7,800 |

### Percentage Changes

|                |      |      |       |      |      |      |      |      |
|----------------|------|------|-------|------|------|------|------|------|
| 1930 to 1939.. | +17% | +41% | +100% | -25% | -84% | -33% | +79% | -24% |
|----------------|------|------|-------|------|------|------|------|------|

### ALL CITIES\*

|           |        |       |       |     |     |     |     |       |
|-----------|--------|-------|-------|-----|-----|-----|-----|-------|
| 1937..... | 17,100 |       |       |     |     |     |     |       |
| 1938..... | 18,900 | 8,300 | 2,300 | 650 | 130 | 570 | 250 | 1,300 |
| 1939..... | 18,300 | 8,100 | 2,300 | 650 | 130 | 430 | 300 | 1,400 |

### RURAL ONLY\*

|           |        |       |       |     |    |     |     |       |
|-----------|--------|-------|-------|-----|----|-----|-----|-------|
| 1937..... | 32,540 |       |       |     |    |     |     |       |
| 1938..... | 18,500 | 4,530 | 6,480 | 940 | 30 | 230 | 840 | 4,220 |
| 1939..... | 19,300 | 4,300 | 6,430 | 730 | 30 | 470 | 650 | 4,850 |

Source: National Safety Council approximations based on reports from U. S. Census Bureau and city and state traffic authorities.

\*Cities under 10,000 population are grouped with rural in the two upper sections of this table because a separation between "all cities" and "rural only" was not possible prior to 1937. †See corresponding footnote of table on opposite page.

NOTE 1. Total Deaths in cities over 10,000 population: 1934, 9,360; 1935, 10,100; 1936, 10,100; 1937, 11,000; 1938, 11,500; 1939, 12,200.

NOTE 2. Total Deaths in rural areas and cities under 10,000: 1934, 10,100; 1935, 11,800; 1936, 12,800; 1937, 14,000; 1938, 15,000; 1939, 15,000.

# PERCENTAGES OF TOTAL TRAFFIC ON VARIOUS HIGHWAY SYSTEMS ORIGINATED IN URBAN AND RURAL COMMUNITIES

Source: Public Aids to Motor Vehicle Transportation

| State                | Rural Highways |       |           |       |       |       | City Streets 1/ |       |
|----------------------|----------------|-------|-----------|-------|-------|-------|-----------------|-------|
|                      | Primary        |       | Secondary |       | Local |       |                 |       |
|                      | Urban          | Rural | Urban     | Rural | Urban | Rural | Urban           | Rural |
| Colo.                | 61.6           | 38.4  | 30.6      | 69.4  | 17.4  | 82.6  | 92.7            | 7.3   |
| Fla.                 | 63.0           | 37.0  | 55.6      | 44.4  | 22.9  | 77.1  | 89.7            | 10.3  |
| Id.                  | 43.3           | 56.7  | 18.8      | 81.2  | 15.1  | 84.9  | 86.8            | 11.2  |
| La.                  | 46.5           | 53.5  | 16.0      | 84.0  | -     | -     | 93.5            | 6.5   |
| Mich.                | 67.8           | 32.2  | 43.6      | 56.4  | 13.2  | 86.8  | 96.3            | 3.7   |
| Minn.                | 51.4           | 48.6  | 12.6      | 87.4  | 10.6  | 89.4  | 93.3            | 6.7   |
| Mo.                  | 51.6           | 48.4  | 16.8      | 83.2  | 23.4  | 76.6  | 94.5            | 5.5   |
| Mont.                | 36.6           | 63.4  | 14.8      | 85.2  | 14.1  | 85.9  | 79.2            | 20.8  |
| N.Y.                 | 64.2           | 35.8  | 45.6      | 54.4  | 14.3  | 85.7  | 95.4            | 4.6   |
| Ohio                 | 60.5           | 39.5  | 14.9      | 85.1  | 3.9   | 96.1  | 96.0            | 4.0   |
| Okl.                 | 52.8           | 47.2  | 19.8      | 80.2  | 15.1  | 84.9  | 91.9            | 8.1   |
| Ore.                 | 43.2           | 56.8  | 20.3      | 79.7  | 18.4  | 81.6  | 73.5            | 26.5  |
| Penn.                | 65.5           | 34.5  | 35.8      | 64.2  | 21.3  | 78.7  | 92.2            | 7.8   |
| S.Dak.               | 33.1           | 66.9  | 11.2      | 88.8  | 9.9   | 90.1  | 84.0            | 16.0  |
| Utah                 | 59.1           | 40.9  | 23.9      | 76.1  | 8.0   | 92.0  | 88.5            | 11.5  |
| Wash.                | 50.0           | 50.0  | 20.9      | 79.1  | 30.5  | 69.5  | 90.5            | 9.5   |
| Wis.                 | 52.6           | 47.4  | 21.1      | 78.9  | 7.8   | 92.2  | 93.5            | 6.5   |
| Average (Unweighted) | 53.1           | 46.9  | 24.8      | 75.2  | 14.5  | 85.5  | 90.2            | 9.8   |

1/

Traffic which originates and terminates within a city; other traffic on urban extensions of city streets is included under "primary" or "secondary".

Source: Highway Planning Surveys.

## PER CENT DISTRIBUTION OF TRAVEL

Source: Public Aids to Motor Vehicle Transportation

| Place of Ownership   | Rural Roads | City Streets                                   |               | Total  |
|----------------------|-------------|--|---------------|--------|
|                      |             | Entering or Leaving by State or County Highway | Local Streets |        |
| Unincorporated areas | 75.5        | 22.7   | 1.8           | 100.00 |
| Incorporated areas:  |             |  |               |        |
| 0 - 1,000            | 70.1        | 23.5   | 6.4           | 100.00 |
| 1,001 - 2,500        | 61.4        | 26.5   | 12.1          | 100.00 |
| 2,501 - 10,000       | 55.3        | 28.8   | 15.9          | 100.00 |
| 10,001 - 25,000      | 49.8        | 27.7   | 22.5          | 100.00 |
| 25,001 - 100,000     | 40.4        | 28.2   | 31.4          | 100.00 |
| 100,001 - 500,000    | 30.6        | 17.3   | 52.1          | 100.00 |
| 500,001 - 1,000,000  | 13.1        | 16.3   | 70.6          | 100.00 |
| Average              | 47.0        | 22.2   | 30.8          | 100.00 |

Note: Confirmation of Relation Between Population and Importance of Arterial Streets.

## AVERAGE LENGTHS OF TRIPS

Traveled\* by Passenger Cars Registered in—

Source: Public Aids to Motor Vehicle Transportation

| State         | Rural Areas |        | Urban Areas |        | All Places |        |
|---------------|-------------|--------|-------------|--------|------------|--------|
|               | Mean        | Median | Mean        | Median | Mean       | Median |
|               | Mi.         | Mi.    | Mi.         | Mi.    | Mi.        | Mi.    |
| Florida       | 11.4        | 6.3    | 23.5        | 11.3   | 16.1       | 8.1    |
| Kansas        | 9.6         | 5.0    | 29.6        | 14.6   | 13.3       | 6.3    |
| Louisiana     | 9.9         | 5.5    | 28.3        | 12.6   | 14.2       | 6.5    |
| Minnesota     | 11.4        | 6.1    | 34.7        | 15.1   | 16.4       | 7.3    |
| New Hampshire | 15.0        | 8.3    | 18.5        | 9.9    | 15.5       | 8.9    |
| Pennsylvania  | 9.8         | 5.9    | 17.5        | 8.5    | 13.5       | 7.1    |
| South Dakota  | 15.9        | 8.6    | 30.9        | 9.9    | 18.7       | 8.7    |
| Utah          | 10.8        | 4.8    | 34.2        | 14.3   | 17.4       | 6.6    |
| Vermont       | 9.3         | 5.7    | 21.6        | 9.8    | 11.7       | 6.5    |
| Washington    | 11.5        | 5.8    | 30.6        | 14.1   | 14.6       | 6.7    |
| Wisconsin     | 10.9        | 6.4    | 31.2        | 15.9   | 15.9       | 7.9    |

\*One Way Distance of All Trips; Thus, a Trip From Washington to Baltimore and Return Would Be Considered as Two Trips of 40 Miles Each

Farms on Unimproved Roads—A study made in 31 states showed that 23.4 per cent of all-year-round rural dwellings in these states were on unimproved roads.



## MOTOR VEHICLE TRAFFIC DEATHS, 1938-1939

Source: Accident Facts 1940 Edition, National Safety Council.

| States                  | MOTOR VEHICLE TRAFFIC DEATHS     |       | Death Rates* 1939 |               |
|-------------------------|----------------------------------|-------|-------------------|---------------|
|                         | State Traffic Safety Authorities |       | Population Basis  | Mileage Basis |
|                         | 1938                             | 1939  |                   |               |
| Total U. S.**.....      | ....                             | ....  | 24.9              | 12.1          |
| Alabama .....           | ....                             | ....  | 21.4              | 20.5          |
| Arizona .....           | 215                              | 200   | 52.2              | 17.5          |
| Arkansas .....          | 354                              | 333   | 17.3              | 16.0          |
| California .....        | 2,779                            | 2,698 | 45.2              | 12.7          |
| Colorado .....          | 325                              | 327   | 30.3              | 12.5          |
| Connecticut .....       | 354                              | 339   | 20.3              | 8.0           |
| Delaware .....          | 80                               | 70    | 30.7              | 11.0          |
| District of Columbia... | 79                               | 81    | 12.6              | 4.1           |
| Florida .....           | ....                             | ....  | 42.3              | 16.0          |
| Georgia .....           | 721                              | 823   | 23.4              | 16.2          |
| Idaho .....             | 164                              | 175   | 33.3              | 13.8          |
| Illinois .....          | 2,261                            | 2,177 | 28.7              | 13.0          |
| Indiana .....           | 1,029                            | 1,099 | 29.6              | 13.2          |
| Iowa .....              | 530                              | 486   | 20.8              | 8.6           |
| Kansas .....            | 388                              | ....  | 20.8              | 8.9           |
| Kentucky .....          | 539                              | 616   | 18.5              | 15.6          |
| Louisiana .....         | ....                             | ....  | 23.1              | 16.2          |
| Maine .....             | 188                              | 181   | 22.0              | 10.2          |
| Maryland .....          | 422                              | 417   | 25.1              | 11.9          |
| Massachusetts .....     | 599                              | 622   | 13.5              | 6.7           |
| Michigan .....          | 1,572                            | 1,454 | 32.5              | 12.1          |
| Minnesota .....         | 564                              | 613   | 21.3              | 9.2           |
| Mississippi .....       | 406                              | 417   | 20.1              | 16.4          |
| Missouri .....          | ....                             | ....  | 20.8              | 10.2          |
| Montana .....           | 150                              | 145   | 27.8              | 11.1          |
| Nebraska .....          | 277                              | 225   | 20.3              | 10.1          |
| Nevada .....            | 71                               | 61    | 70.3              | 15.0          |
| New Hampshire .....     | 87                               | 105   | 17.1              | 7.4           |
| New Jersey .....        | 814                              | 865   | 18.7              | 7.6           |
| New Mexico .....        | 201                              | 161   | 47.6              | 17.2          |
| New York .....          | 2,429                            | 2,528 | 18.7              | 10.2          |
| North Carolina .....    | 958                              | 937   | 27.4              | 17.8          |
| North Dakota .....      | 98                               | 109   | 13.9              | 8.7           |
| Ohio .....              | ....                             | ....  | 28.3              | 11.9          |
| Oklahoma .....          | 485                              | 518   | 19.0              | 9.8           |
| Oregon .....            | 336                              | 333   | 32.7              | 11.8          |
| Pennsylvania .....      | 1,871                            | 1,896 | 18.4              | 10.1          |
| Rhode Island .....      | 66                               | 74    | 9.7               | 4.0           |
| South Carolina .....    | 545                              | 454   | 29.1              | 21.0          |
| South Dakota .....      | 136                              | 136   | 19.7              | 9.9           |
| Tennessee .....         | 577                              | 533   | 19.9              | 16.7          |
| Texas .....             | 1,583                            | 1,632 | 25.6              | 10.6          |
| Utah .....              | 160                              | 216   | 30.8              | 13.4          |
| Vermont .....           | 84                               | 86    | 21.9              | 9.8           |
| Virginia .....          | 813                              | 690   | 30.0              | 17.1          |
| Washington .....        | 449                              | 478   | 27.1              | 10.6          |
| West Virginia .....     | 365                              | 381   | 19.6              | 13.3          |
| Wisconsin .....         | 692                              | 675   | 23.7              | 10.4          |
| Wyoming .....           | 120                              | 103   | 51.1              | 15.5          |

Source: State Traffic Authorities. Traffic authorities include only accidents occurring in traffic and usually classify by time and place of accident. Blanks indicate no reports, or incomplete reports. Vital statistics figures for 1938 are not final figures, but are the figures comparable with 1939 provisional figures.

\* Death rates are: number of deaths per 100,000 population and number of deaths per 100,000,000 vehicle miles. Rates are calculated from Traffic Statistics reports where available; otherwise from Vital Statistics reports.

NOTE: In addition to reports of deaths, state traffic authorities generally collect reports of non-fatal injury accidents and, in some cases, of property damage accidents. Comparisons of the information from state to state lack validity, however, because there is so much variation in the completeness of reporting. The national ratios commonly used are: 35 injuries and 150 property damage accidents for each death.

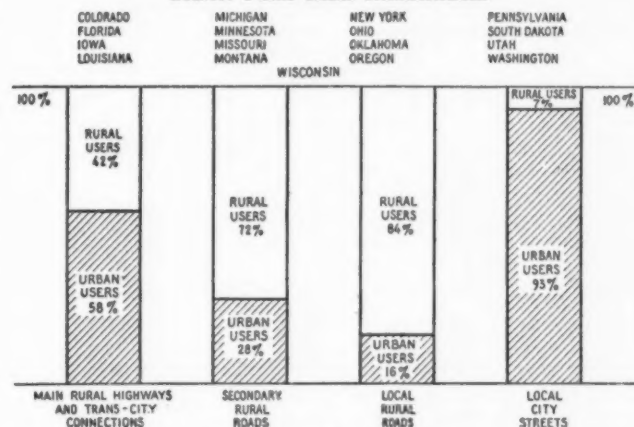
## TREND IN DIVERSION OF HIGHWAY USER REVENUE

Source: Public Roads Administration

| Year | Total        | Per Cent of User Revenue |
|------|--------------|--------------------------|
| 1925 | \$ 7,179,000 | 1.8                      |
| 1926 | 6,903,000    | 1.5                      |
| 1927 | 8,793,000    | 1.6                      |
| 1928 | 12,046,000   | 1.9                      |
| 1929 | 14,697,000   | 1.9                      |
| 1930 | 20,160,000   | 2.4                      |
| 1931 | 23,600,000   | 2.7                      |
| 1932 | 76,747,000   | 9.2                      |
| 1933 | 91,577,000   | 11.2                     |
| 1934 | 122,150,000  | 13.8                     |
| 1935 | 147,143,000  | 15.7                     |
| 1936 | 169,344,000  | 16.0                     |
| 1937 | 161,413,000  | 13.5                     |
| 1938 | 158,284,000  | 13.5                     |

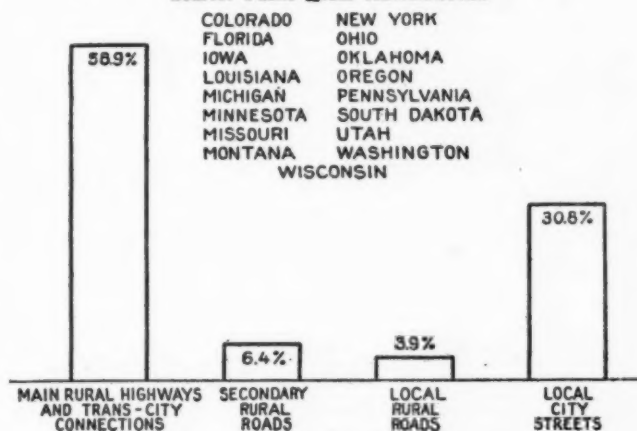
## PROPORTIONS OF URBAN AND RURAL USERS OF EACH CLASS OF HIGHWAYS IN 17 STATES

Source: Public Roads Administration



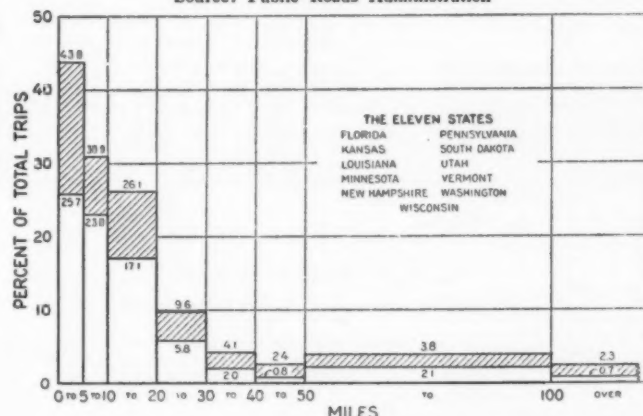
## DISTRIBUTION OF TOTAL ANNUAL MOTOR VEHICLE TRAVEL IN 17 STATES ACCORDING TO THE CLASSES OF HIGHWAYS BY WHICH IT IS SERVED

Source: Public Roads Administration



## RANGE OF FREQUENCY DISTRIBUTION OF THE LENGTH OF ALL ONE WAY TRIPS OF PASSENGER CARS WHICH EXTEND OUTSIDE OF CITIES IN ELEVEN STATES

Source: Public Roads Administration



40% of Highway Travel for Business Purposes—Of the total travel on all Michigan highways and streets, 60 per cent is for recreational and social purposes, and 40 per cent for business purposes. The extent of travel in the systems related to the total travel on each system is:

|                             | Recreational and Social | Business |
|-----------------------------|-------------------------|----------|
| Urban Streets .....         | 60%                     | 40%      |
| Rural Trunklines .....      | 61%                     | 39%      |
| County and Local Roads..... | 53%                     | 47%      |

### DISTRIBUTION OF PASSENGER CAR TRAVEL In West Virginia Incorporated Places

Source: Public Aids to Motor Vehicle Transportation

| Place of Residence       | Percentage of all city travel on - |                    |                    |       |
|--------------------------|------------------------------------|--------------------|--------------------|-------|
|                          | Urban Extensions of -              |                    | Other City Streets | Total |
|                          | Primary Highways                   | Secondary Highways |                    |       |
| Primary rural highways   | 80.6                               | 0.7                | 18.7               | 100.0 |
| Secondary rural highways | 64.1                               | 17.5               | 18.4               | 100.0 |
| Unincorporated areas     | 60.6                               | 12.9               | 18.5               | 100.0 |
| Incorporated places      |                                    |                    |                    |       |
| 0 to 1000 population     | 52.6                               | 0.2                | 47.2               | 100.0 |
| Total rural areas        | 66.5                               | 11.3               | 22.2               | 100.0 |
| Total urban areas        | 33.5                               | 0.5                | 66.0               | 100.0 |

### FATAL TRUNK-LINE ACCIDENTS PER MILE OF TRUNK LINE

Occurrence In Zones About Detroit and Other Cities, 1934-1937

Source: Proceedings 24th Annual Michigan Highway Conference

|                            | 0- to 1-mile zone |            | 2- to 3-mile zone |            | 4- to 5-mile zone |            |
|----------------------------|-------------------|------------|-------------------|------------|-------------------|------------|
|                            | Detroit           | All cities | Detroit           | All cities | Detroit           | All cities |
| All types.....             | 1.37              | 0.50       | 0.64              | 0.24       | 0.67              | 0.21       |
| Pedestrian.....            | .75               | .18        | .09               | .05        | .11               | .05        |
| Intersection.....          | .33               | .07        | .38               | .04        | .33               | .03        |
| Between intersections..... | .29               | .26        | .18               | .14        | .22               | .14        |

Note: These percentages point clearly to sections of Trunk line in the vicinity of cities as the places where fatal accident occurrence is concentrated. This is due to the suburban development along these sections which causes higher traffic volumes and a mixture of local and through travel on the same pavements. Isolating through traffic on a limited access express ways in metropolitan districts would cut down most of these types of accidents, particularly those in which pedestrians are involved and those at intersections.

### FATAL ACCIDENT OCCURRENCE IN ZONES ABOUT CITIES, 1934-1937, INCLUSIVE

Types of Fatal Accidents Occurring in 1-, 3-, and 5-Mile Zones About Cities in Percentages of Total Rural State Trunk-Line Fatal Accidents of Each Type

Source: Hearings on H. R. 7891—76th Congress

|                             | 1-mile zone—12.3 percent system mileage | 3-mile zone—32.9 percent system mileage | 5-mile zone—48.6 percent system mileage |
|-----------------------------|---|---|---|
| All fatal accidents.....    | 28.1                                    | 52.3                                    | 68.6                                    |
| Pedestrian accidents.....   | 34.4                                    | 57.3                                    | 72.4                                    |
| Intersection accidents..... | 26.5                                    | 49.6                                    | 67.5                                    |
| Between intersections.....  | 25.6                                    | 50.2                                    | 66.7                                    |

### TRAFFIC DISTRIBUTION

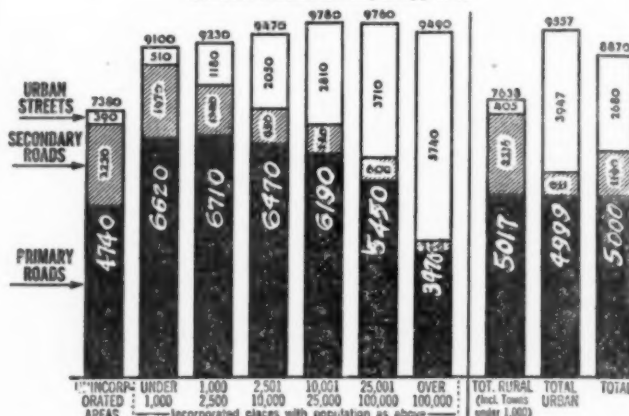
Source: U. S. Bureau of Public Roads (1936)

| Road System                  | Vehicle - miles (1,000,000) | Percent |
|------------------------------|-----------------------------|---------|
| State primary highways       | 139,496.6                   | 56.3    |
| State secondary highways     | 5,289.2                     | 2.2     |
| County and other local roads | 27,878.8                    | 11.3    |
| Urban streets                | 74,185.8                    | 30.2    |
| Total                        | 245,850.4                   | 100.0   |

### AVERAGE VEHICLE TRAVELS 8,870 MILES ANNUALLY

Annual Mileage Driven Per Passenger Car and Truck Registration in Cities of Various Sizes on Primary and Secondary Roads and City Streets

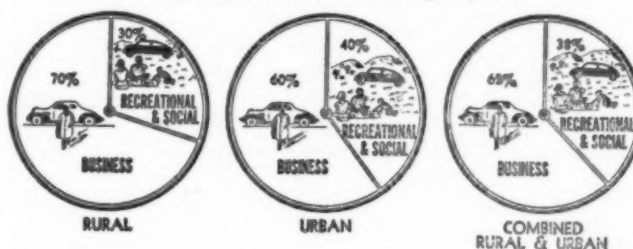
Source: Public Roads, May, 1939



Note: Based on Preliminary Data From State-Wide Highway Planning Surveys of 17 States—Colorado, Florida, Iowa, Louisiana, Michigan, Minnesota, Missouri, Montana, New York, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Utah, Washington, and Wisconsin.

### 62% OF PASSENGER CAR MILEAGE USED ON BUSINESS

Source: Automobile Facts and Figures, 1939



Note: Based on Preliminary Data From State-Wide Highway Planning Surveys.

**Fatal Traffic Accidents on Urban Streets and Rural Roads**  
—During the 4-year period 1934-37 47.86 per cent of the fatal traffic accidents in Michigan occurred on urban streets, 24.83 per cent being on Detroit streets and 23.03 per cent on other streets. Of the 52.14 per cent death total on rural roads 34.41 per cent was on state trunk lines and 17.73 per cent on other rural roads.

### WHEN STATE LEGISLATURES MEET

Source: American Association of State Highway Officials

Even Years Only (4 States)

Kentucky Mississippi South Carolina Virginia

Odd Years Only (40 States)

|             |           |                |               |
|-------------|-----------|----------------|---------------|
| Alabama     | Illinois  | Montana        | Pennsylvania  |
| Arizona     | Indiana   | Nebraska       | South Dakota  |
| Arkansas    | Iowa      | Nevada         | Tennessee     |
| California  | Kansas    | New Hampshire  | Texas         |
| Colorado    | Louisiana | New Mexico     | Utah          |
| Connecticut | Maine     | North Carolina | Vermont       |
| Delaware    | Maryland  | North Dakota   | Washington    |
| Florida     | Michigan  | Ohio           | West Virginia |
| Georgia     | Minnesota | Oklahoma       | Wisconsin     |
| Idaho       | Missouri  | Oregon         | Wyoming       |

Meets Annually (4 States)

Massachusetts New Jersey New York Rhode Island

## RELATED MOTOR VEHICLE DATA COMPARED WITH NATIONAL INCOME AND POPULATION

Source: Public Roads Administration Data

| YEAR | ANNUAL REGISTRATION 1/ |           |            | CUMULATIVE DOMESTIC MARKET 2/ |           |            | CUMULATIVE REPLACEMENT 3/ |           |            | 1000 GALLONS 3/ | POPULATION 4/ | REALIZED NATIONAL INCOME \$1,000,000 5/ |
|------|------------------------|-----------|------------|-------------------------------|-----------|------------|---------------------------|-----------|------------|-----------------|---------------|---|
|      | PASSENGER CARS         | TRUCKS    | TOTAL      | PASSENGER CARS                | TRUCKS    | TOTAL      | PASSENGER CARS            | TRUCKS    | TOTAL      |                 |               |   |
| 1895 | 4                      |           | 4          | 4                             |           | 4          | 0                         |           | 0          | 0               | 89,500        | 15,180                                  |
| 1896 | 15                     |           | 15         | 19                            |           | 19         | 13                        |           | 13         | 1               | 70,885        | 13,626                                  |
| 1897 | 80                     |           | 80         | 129                           |           | 129        | 39                        |           | 39         | 7               | 72,189        | 14,178                                  |
| 1898 | 600                    |           | 600        | 1,129                         |           | 1,129      | 329                       |           | 329        | 80              | 73,494        | 14,752                                  |
| 1899 | 3,200                  |           | 3,200      | 3,659                         |           | 3,659      | 429                       |           | 429        | 364             | 74,799        | 15,364                                  |
| 1900 | 7,600                  |           | 7,600      | 7,821                         |           | 7,821      | 21                        |           | 21         | 1,055           | 76,129        | 16,156                                  |
| 1901 | 14,800                 |           | 14,800     | 14,821                        |           | 14,821     | 21                        |           | 21         | 2,220           | 77,747        | 17,170                                  |
| 1902 | 23,000                 |           | 23,000     | 23,821                        |           | 23,821     | 21                        |           | 21         | 3,749           | 79,365        | 18,444                                  |
| 1903 | 32,920                 |           | 32,920     | 35,056                        |           | 35,056     | 2,136                     |           | 2,136      | 5,761           | 80,963        | 19,595                                  |
| 1904 | 54,500                 | 410       | 55,000     | 57,475                        | 411       | 57,886     | 2,685                     | 1         | 2,686      | 10,225          | 82,661        | 20,090                                  |
| 1905 | 77,400                 | 600       | 78,000     | 82,025                        | 851       | 82,876     | 4,625                     | 261       | 4,886      | 15,522          | 84,219        | 21,458                                  |
| 1906 | 105,900                | 1,100     | 107,000    | 112,525                       | 1,351     | 113,876    | 6,625                     | 261       | 6,886      | 22,254          | 85,937        | 23,165                                  |
| 1907 | 140,300                | 1,700     | 142,000    | 152,025                       | 2,061     | 154,086    | 11,725                    | 361       | 12,086     | 30,614          | 87,445        | 24,403                                  |
| 1908 | 194,400                | 3,100     | 197,500    | 210,825                       | 3,561     | 214,386    | 18,425                    | 461       | 18,886     | 44,438          | 89,073        | 25,458                                  |
| 1909 | 305,950                | 6,050     | 312,000    | 332,756                       | 6,616     | 339,372    | 28,506                    | 766       | 29,272     | 73,350          | 90,691        | 26,456                                  |
| 1910 | 456,500                | 10,000    | 466,500    | 506,556                       | 13,616    | 520,172    | 48,356                    | 2,816     | 51,172     | 114,314         | 92,267        | 28,166                                  |
| 1911 | 619,500                | 20,000    | 639,500    | 699,076                       | 23,497    | 722,572    | 79,575                    | 3,497     | 83,072     | 162,433         | 93,682        | 29,104                                  |
| 1912 | 902,600                | 41,400    | 944,000    | 1,045,155                     | 45,357    | 1,090,512  | 140,565                   | 3,957     | 144,522    | 247,328         | 95,097        | 30,097                                  |
| 1913 | 1,194,522              | 63,600    | 1,258,122  | 1,476,275                     | 87,667    | 1,563,942  | 224,013                   | 4,167     | 228,180    | 342,165         | 96,512        | 31,450                                  |
| 1914 | 1,625,729              | 82,600    | 1,708,329  | 1,988,654                     | 89,952    | 2,078,606  | 370,115                   | 352       | 370,467    | 467,732         | 97,958        | 31,813                                  |
| 1915 | 2,309,666              | 136,000   | 2,445,666  | 2,881,784                     | 142,322   | 3,024,106  | 542,056                   | 6,322     | 548,378    | 728,808         | 99,343        | 32,533                                  |
| 1916 | 3,097,996              | 215,000   | 3,312,996  | 3,515,956                     | 215,632   | 3,731,588  | 1,018,766                 | 832       | 1,019,618  | 1,074,977       | 100,768       | 32,729                                  |
| 1917 | 4,657,340              | 324,000   | 4,981,340  | 4,965,540                     | 6,004,014 | 6,333,913  | 1,344,674                 | 3,899     | 1,350,573  | 1,544,835       | 102,173       | 33,576                                  |
| 1918 | 6,521,074              | 525,000   | 7,046,074  | 6,910,587                     | 546,641   | 7,457,228  | 1,388,970                 | 21,641    | 1,410,611  | 2,022,237       | 103,588       | 34,254                                  |
| 1919 | 6,771,074              | 794,372   | 7,565,446  | 8,501,211                     | 607,199   | 9,108,410  | 1,730,137                 | 12,627    | 1,742,764  | 2,632,775       | 105,003       | 34,945                                  |
| 1920 | 8,225,859              | 1,006,062 | 9,231,921  | 10,260,493                    | 1,099,081 | 11,359,574 | 2,054,634                 | 92,999    | 2,147,633  | 3,325,499       | 106,422       | 35,434                                  |
| 1921 | 9,345,195              | 1,117,100 | 10,462,295 | 11,677,510                    | 1,234,554 | 12,912,064 | 2,331,313                 | 117,464   | 2,448,777  | 3,798,176       | 108,445       | 36,699                                  |
| 1922 | 10,690,112             | 1,348,263 | 12,038,375 | 13,846,693                    | 1,462,157 | 15,308,850 | 2,956,583                 | 133,894   | 3,090,477  | 4,808,728       | 109,890       | 37,171                                  |
| 1923 | 12,357,214             | 1,754,963 | 14,112,177 | 15,926,353                    | 1,631,234 | 17,557,587 | 3,939,139                 | 96,271    | 4,035,410  | 5,855,765       | 111,692       | 38,668                                  |
| 1924 | 15,492,727             | 2,148,936 | 17,641,663 | 20,265,064                    | 2,171,789 | 22,436,853 | 4,772,337                 | 25,653    | 4,798,000  | 7,266,889       | 113,727       | 39,003                                  |
| 1925 | 17,544,274             | 2,499,929 | 20,044,203 | 23,684,136                    | 2,599,653 | 26,283,789 | 6,139,662                 | 99,024    | 6,238,686  | 8,588,840       | 115,378       | 40,051                                  |
| 1926 | 19,288,600             | 2,830,734 | 22,119,334 | 27,178,927                    | 3,002,933 | 30,181,860 | 7,680,327                 | 164,199   | 7,844,526  | 9,798,964       | 117,136       | 41,253                                  |
| 1927 | 20,280,051             | 2,938,058 | 23,218,109 | 29,783,419                    | 3,333,358 | 33,116,777 | 9,503,367                 | 245,330   | 9,748,697  | 10,593,681      | 118,197       | 42,526                                  |
| 1928 | 21,441,033             | 3,168,368 | 24,609,401 | 33,179,934                    | 3,712,918 | 36,892,852 | 11,759,901                | 324,030   | 12,083,931 | 12,153,570      | 119,862       | 43,804                                  |
| 1929 | 23,192,015             | 3,461,435 | 26,653,450 | 37,316,239                    | 4,201,271 | 41,517,510 | 14,124,224                | 732,834   | 14,857,058 | 14,177,420      | 121,358       | 45,008                                  |
| 1930 | 23,140,913             | 3,577,925 | 26,718,838 | 39,653,220                    | 4,616,561 | 44,269,781 | 16,712,305                | 1,036,576 | 17,748,881 | 14,751,172      | 123,091       | 46,298                                  |
| 1931 | 22,429,033             | 3,697,353 | 26,126,386 | 41,694,008                    | 4,923,590 | 46,617,598 | 19,282,973                | 1,368,270 | 20,651,243 | 15,408,531      | 124,113       | 47,508                                  |
| 1932 | 20,969,478             | 3,393,762 | 24,363,240 | 42,754,352                    | 5,111,457 | 47,865,809 | 21,705,804                | 1,704,635 | 23,410,439 | 14,247,879      | 124,974       | 48,708                                  |
| 1933 | 20,761,097             | 3,385,972 | 24,147,069 | 44,229,739                    | 5,379,544 | 49,609,283 | 23,479,642                | 2,026,672 | 25,506,314 | 14,254,321      | 125,770       | 49,913                                  |
| 1934 | 21,613,650             | 3,609,450 | 25,223,100 | 46,223,502                    | 5,628,370 | 51,851,872 | 24,696,612                | 2,216,690 | 26,913,302 | 15,292,012      | 126,626       | 51,060                                  |
| 1935 | 22,656,029             | 3,856,762 | 26,512,791 | 48,265,372                    | 6,398,506 | 54,663,878 | 26,007,350                | 2,541,824 | 28,549,174 | 16,284,077      | 127,521       | 52,254                                  |
| 1936 | 24,270,915             | 4,281,673 | 28,552,588 | 52,723,430                    | 7,048,583 | 59,772,013 | 28,432,515                | 2,799,910 | 31,232,425 | 17,855,454      | 128,429       | 53,446                                  |
| 1937 | 25,556,449             | 4,614,943 | 30,171,392 | 56,366,616                    | 7,738,257 | 64,104,873 | 30,840,367                | 3,223,414 | 34,063,781 | 19,218,121      | 129,237       | 54,641                                  |
| 1938 | 25,339,710             | 4,513,200 | 29,852,910 | 59,177,645                    | 8,090,571 | 67,268,216 | 32,637,935                | 3,577,371 | 36,215,306 | 19,504,621      | 130,189       | 55,840                                  |

1/ Includes Public and Exempt Vehicles. Data From Public Roads Administration.

2/ Automobile Manufacturers Association.

3/ Partly Estimated - Public Roads Administration.

4/ Annual Midyear Estimates, Bureau of the Census.

5/ National Industrial Conference Board.

## UNIT TRUCKS AND TRUCK COMBINATIONS

Loadmeter Data

Source: Public Roads Administration Data

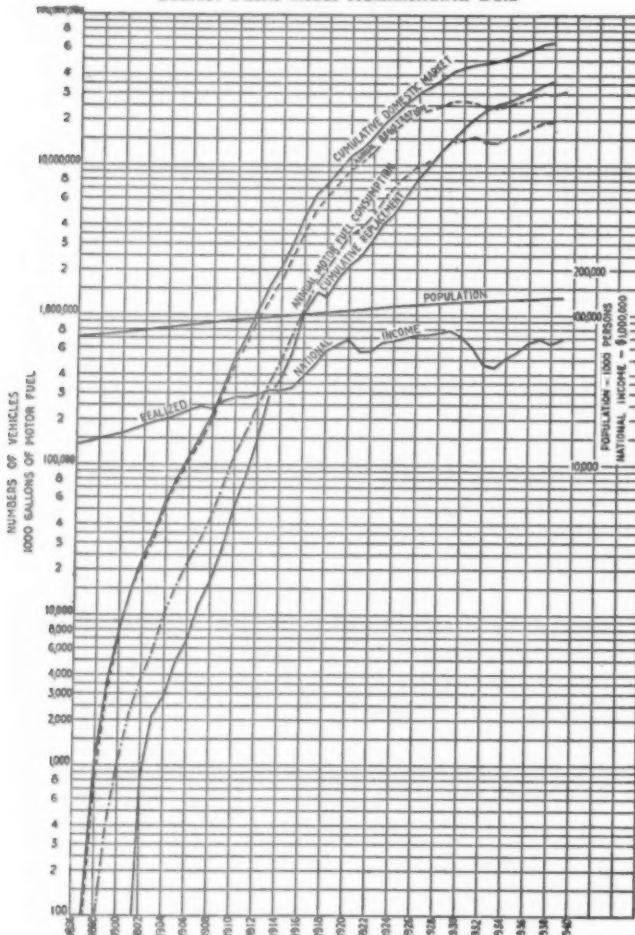
| Capacity<br>Group | -----LOADED----- |               |               | -----EMPTY----- |               |             | Av.Load<br>Loaded<br>Lb. | Average-<br>Carried-<br>Load<br>All Trips<br>Lb. |
|-------------------|------------------|---------------|---------------|-----------------|---------------|-------------|--------------------------|--|
|                   | No.              | Av.Wt.<br>Lb. | Total Lb.     | No.             | Av.Wt.<br>Lb. | Total       |                          |  |
| <u>4 States</u>   |                  |               |               |                 |               |             |                          |  |
| Under 1 3/4       | 167,625          | 7,995         | 1,340,126,281 | 125,980         | 4,491         | 565,740,169 | 3,504                    | 2,000  |
| 1 3/4 - 4 3/4     | 25,771           | 14,072        | 362,654,466   | 13,134          | 7,648         | 100,455,359 | 6,424                    | 4,256  |
| 5 and over        | 12,851           | 25,313        | 325,294,927   | 3,484           | 12,463        | 43,421,223  | 12,850                   | 10,109   |
| All               | 206,247          | 9,833         | 2,028,075,674 | 142,598         | 4,976         | 709,616,751 |                          | 2,632  |

| Capacity<br>Group | -----GROSS----- |               |               | -----TARE----- |               |               | Total<br>Average<br>Carried<br>Load<br>All Trips<br>Lb. |
|-------------------|-----------------|---------------|---------------|----------------|---------------|---------------|---|
|                   | No.             | Av.Wt.<br>Lb. | Total Lb.     | No.            | Av.Wt.<br>Lb. | Total Lb.     |   |
| <u>4 States</u>   |                 |               |               |                |               |               |   |
| Under 1 3/4       | 293,605         | 6,491         | 1,905,866,450 | 293,605        | 4,491         | 1,318,580,055 | 587,286,395   |
| 1 3/4 - 4 3/4     | 38,905          | 11,904        | 463,109,825   | 38,905         | 7,648         | 297,545,440   | 165,564,385   |
| 5 and over        | 16,335          | 22,572        | 368,716,150   | 16,335         | 12,463        | 203,583,105   | 165,133,045   |
| All               | 348,845         | 7,848         | 2,737,692,425 | 348,845        | 5,216         | 1,819,708,600 | 917,983,825   |



# RELATED MOTOR VEHICLE DATA COMPARED WITH NATIONAL INCOME AND POPULATION

Source: Public Roads Administration Data



## TRUCK SURVIVAL DATA

Source: Public Roads Administration Data

| Age | Percent of Previous Years Registration Required | Percent Surviving | Annual Retirement Percent of Original | Automotive News |
|-----|---|-------------------|---------------------------------------|-----------------|
| 0   | 0.00  | 100.00            | 0.00                                  | 100.00          |
| 1   | 1.70  | 98.30             | 1.70                                  | 99.80           |
| 2   | 3.60  | 94.76             | 3.54                                  | 37.51           |
| 3   | 6.60  | 88.51             | 6.25                                  | 78.62           |
| 4   | 7.70  | 81.69             | 6.82                                  | 78.62           |
| 5   | 9.80  | 73.68             | 8.01                                  | 70.95           |
| 6   | 12.00   | 64.84             | 8.84                                  | 69.57           |
| 7   | 14.20   | 55.63             | 9.21                                  | 72.95           |
| 8   | 16.60   | 46.40             | 9.23                                  | 56.30           |
| 9   | 19.10   | 37.54             | 8.86                                  | 57.53           |
| 10  | 21.90   | 29.32             | 8.22                                  |                 |
| 11  | 24.90   | 22.02             | 7.30                                  |                 |
| 12  | 28.10   | 15.83             | 6.19                                  |                 |
| 13  | 31.80   | 10.60             | 5.03                                  |                 |
| 14  | 35.90   | 6.92              | 3.88                                  |                 |
| 15  | 40.40   | 4.12              | 2.80                                  |                 |
| 16  | 46.10   | 2.22              | 1.90                                  |                 |
| 17  | 53.50   | 1.03              | 1.19                                  |                 |
| 18  | 62.80   | 0.38              | 0.65                                  |                 |
| 19  | 73.80   | 0.10              | 0.28                                  |                 |
| 20  | 86.00   | 0.01              | 0.09                                  |                 |
| 21  | 100.00  | 0.00              | 0.01                                  |                 |

**State Road Taxes**—In 1929 state road taxes and appropriations from general funds for state highways amounted to approximately \$72,000,000. In 1937 state road taxes totalled only \$775,000, while appropriations from general funds were only \$2,210,000.

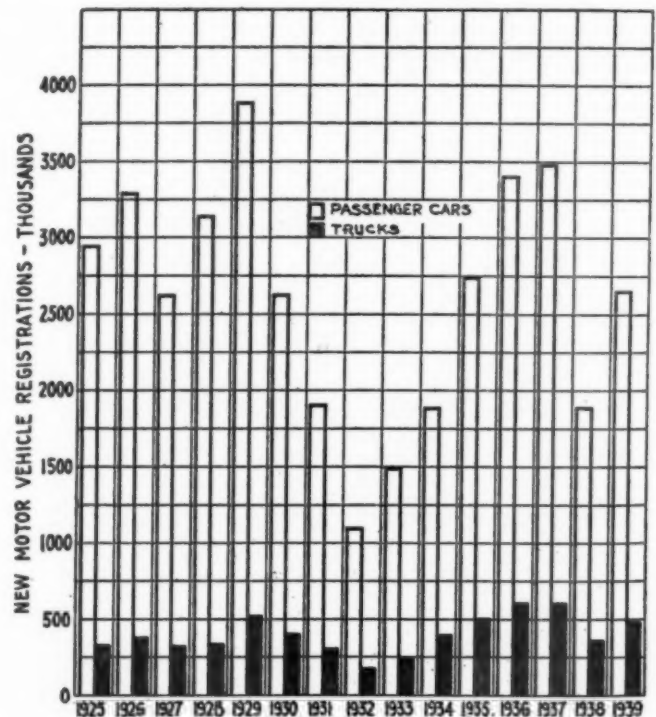
## NEW MOTOR VEHICLE REGISTRATIONS

Source: R. L. Polk and Company

| YEAR | PASSENGER CARS | TRUCKS  | TOTAL     |
|------|----------------|---------|-----------|
| 1925 | 2,943,636      | 333,150 | 3,276,786 |
| 1926 | 3,228,401      | 385,997 | 3,614,398 |
| 1927 | 2,623,538      | 327,965 | 2,951,503 |
| 1928 | 3,139,579      | 341,123 | 3,480,702 |
| 1929 | 3,880,247      | 526,625 | 4,406,872 |
| 1930 | 2,625,979      | 410,699 | 3,036,678 |
| 1931 | 1,908,141      | 313,884 | 2,222,025 |
| 1932 | 1,096,399      | 180,413 | 1,276,812 |
| 1933 | 1,493,794      | 245,869 | 1,739,663 |
| 1934 | 1,888,557      | 403,886 | 2,292,443 |
| 1935 | 2,743,908      | 510,683 | 3,254,591 |
| 1936 | 3,404,497      | 611,644 | 4,016,141 |
| 1937 | 3,483,752      | 618,249 | 4,102,001 |
| 1938 | 1,891,021      | 365,349 | 2,256,370 |
| 1939 | 2,653,377      | 486,748 | 3,140,125 |

## NEW MOTOR VEHICLE REGISTRATIONS

Source: R. L. Polk and Company



**Early Pavements**—Untreated wood blocks were first laid in 1839 in Boston, New York and Philadelphia. Large stone blocks were laid on Broadway, New York City, in 1849. The first brick pavement is believed to have been laid in Charleston, W. Va., in 1872. Bituminous pavements using tar were first laid in the United States in 1866. A pavement resembling sheet asphalt was constructed in Newark, N. J., in 1870, and in 1877 Pennsylvania Ave. in Washington, D. C., was paved with a sheet asphalt mixture. In 1894 portland cement concrete pavement was constructed in Bellefontaine, O.

# TRUCK SALES AND REGISTRATIONS Estimated Survivals and Registrations For Each of Three Size Groups—Light—Medium—Heavy Source: Public Roads Administration Data

| YEAR | ANNUAL DOMESTIC MARKET SALES 1/ |         |        |        | CUMULATIVE DOMESTIC MARKET |            |           |         | ANNUAL TRUCK REGISTRATIONS 2/ |           |         |         |
|------|---------------------------------|---------|--------|--------|----------------------------|------------|-----------|---------|-------------------------------|-----------|---------|---------|
|      | TOTAL                           | LIGHT   | MEDIUM | HEAVY  | TOTAL                      | LIGHT      | MEDIUM    | HEAVY   | TOTAL                         | LIGHT     | MEDIUM  | HEAVY   |
| 1904 | 411                             | 230     | 161    |        | 411                        | 230        | 161       |         | 410                           | 229       | 161     |         |
| 1905 | 450                             | 254     | 196    |        | 861                        | 484        | 377       |         | 600                           | 337       | 263     |         |
| 1906 | 500                             | 285     | 215    |        | 1,361                      | 769        | 592       |         | 1,100                         | 622       | 478     |         |
| 1907 | 700                             | 405     | 295    |        | 2,061                      | 1,174      | 887       |         | 1,700                         | 968       | 738     |         |
| 1908 | 1,500                           | 882     | 618    |        | 3,561                      | 2,056      | 1,505     |         | 3,100                         | 1,790     | 1,310   |         |
| 1909 | 3,255                           | 1,950   | 1,305  |        | 6,816                      | 4,006      | 2,810     |         | 6,050                         | 3,556     | 2,494   |         |
| 1910 | 6,000                           | 3,648   | 2,352  | 36     | 12,816                     | 7,654      | 5,128     | 56      | 10,000                        | 5,972     | 4,000   | 28      |
| 1911 | 10,681                          | 6,612   | 3,952  | 117    | 23,497                     | 14,266     | 9,078     | 153     | 20,000                        | 12,143    | 7,727   | 130     |
| 1912 | 21,860                          | 13,772  | 7,673  | 415    | 45,357                     | 28,038     | 16,751    | 568     | 41,400                        | 25,593    | 15,290  | 517     |
| 1913 | 22,610                          | 14,560  | 7,507  | 543    | 67,967                     | 42,598     | 24,258    | 1,111   | 63,800                        | 39,967    | 22,771  | 1,042   |
| 1914 | 17,985                          | 11,816  | 5,611  | 558    | 85,952                     | 54,414     | 29,869    | 1,669   | 85,600                        | 54,191    | 29,747  | 1,662   |
| 1915 | 56,370                          | 37,937  | 16,347 | 2,086  | 142,322                    | 92,351     | 46,216    | 3,755   | 136,000                       | 88,249    | 44,163  | 3,588   |
| 1916 | 73,510                          | 50,722  | 19,774 | 3,014  | 215,832                    | 143,073    | 65,990    | 6,769   | 215,000                       | 142,521   | 65,736  | 6,743   |
| 1917 | 114,067                         | 81,216  | 29,175 | 4,676  | 329,899                    | 224,289    | 104,165   | 11,445  | 326,000                       | 221,638   | 93,032  | 11,310  |
| 1918 | 216,942                         | 160,103 | 47,844 | 8,995  | 546,841                    | 384,392    | 142,109   | 20,340  | 525,000                       | 369,038   | 136,434 | 19,328  |
| 1919 | 280,388                         | 199,174 | 50,249 | 10,935 | 827,199                    | 583,566    | 192,358   | 31,275  | 794,372                       | 574,292   | 189,302 | 30,778  |
| 1920 | 291,682                         | 226,424 | 46,701 | 8,757  | 1,099,081                  | 819,990    | 239,059   | 40,032  | 1,006,082                     | 750,606   | 218,831 | 35,445  |
| 1921 | 146,875                         | 121,178 | 17,772 | 7,931  | 1,245,956                  | 941,162    | 256,831   | 47,963  | 1,117,100                     | 843,828   | 230,269 | 43,003  |
| 1922 | 247,518                         | 212,123 | 28,217 | 7,178  | 1,493,474                  | 1,153,285  | 285,048   | 55,141  | 1,375,725                     | 1,062,357 | 262,574 | 50,794  |
| 1923 | 349,270                         | 313,994 | 27,942 | 7,334  | 1,842,744                  | 1,467,279  | 312,990   | 62,475  | 1,612,569                     | 1,284,003 | 273,895 | 54,671  |
| 1924 | 340,679                         | 311,040 | 20,441 | 9,198  | 2,183,423                  | 1,778,319  | 333,431   | 71,673  | 2,134,724                     | 1,738,653 | 325,994 | 70,075  |
| 1925 | 418,065                         | 377,095 | 28,339 | 14,632 | 2,601,488                  | 2,155,414  | 359,769   | 86,305  | 2,440,854                     | 2,022,384 | 337,554 | 80,976  |
| 1926 | 412,638                         | 365,597 | 35,598 | 14,443 | 3,014,126                  | 2,521,011  | 392,367   | 100,748 | 2,764,222                     | 2,311,992 | 359,635 | 92,395  |
| 1927 | 327,284                         | 287,683 | 21,747 | 7,854  | 3,341,410                  | 2,808,694  | 424,114   | 108,602 | 2,914,019                     | 2,449,441 | 369,667 | 94,711  |
| 1928 | 379,423                         | 335,410 | 36,804 | 7,209  | 3,720,833                  | 3,144,104  | 460,818   | 115,811 | 3,113,999                     | 2,631,329 | 385,746 | 96,924  |
| 1929 | 467,868                         | 459,099 | 41,471 | 7,318  | 4,208,721                  | 3,583,203  | 502,369   | 123,129 | 3,379,854                     | 2,877,526 | 403,448 | 98,880  |
| 1930 | 413,290                         | 376,507 | 31,410 | 5,373  | 4,622,011                  | 3,959,710  | 533,799   | 128,502 | 3,486,019                     | 2,986,497 | 402,603 | 96,919  |
| 1931 | 309,139                         | 287,499 | 17,312 | 4,328  | 4,931,150                  | 4,247,209  | 551,111   | 132,850 | 3,466,571                     | 2,985,764 | 387,428 | 93,379  |
| 1932 | 187,840                         | 172,249 | 12,398 | 3,193  | 5,118,990                  | 4,419,458  | 563,509   | 136,023 | 3,229,315                     | 2,788,015 | 355,490 | 85,810  |
| 1933 | 268,117                         | 245,327 | 19,841 | 2,949  | 5,387,107                  | 4,684,785  | 583,350   | 138,972 | 3,227,557                     | 2,794,622 | 349,479 | 85,256  |
| 1934 | 448,828                         | 412,471 | 31,416 | 4,937  | 5,835,933                  | 5,077,256  | 614,798   | 143,909 | 3,419,254                     | 2,974,748 | 360,190 | 84,316  |
| 1935 | 570,216                         | 524,029 | 33,643 | 12,544 | 6,406,149                  | 5,601,285  | 648,411   | 156,453 | 3,647,474                     | 3,169,208 | 369,106 | 89,080  |
| 1936 | 649,997                         | 595,397 | 37,700 | 16,900 | 7,056,146                  | 6,196,682  | 686,111   | 173,353 | 4,023,606                     | 3,533,516 | 391,259 | 98,651  |
| 1937 | 689,674                         | 624,155 | 40,691 | 24,628 | 7,745,820                  | 6,820,837  | 726,802   | 198,181 | 4,235,296                     | 3,747,141 | 399,281 | 108,874 |
| 1938 | 352,314                         | 313,207 | 22,196 | 16,911 | 8,098,134                  | 7,134,044  | 748,998   | 215,092 | 4,224,031                     | 3,721,157 | 390,621 | 112,193 |
| 1939 | 545,750                         | 475,894 | 38,203 | 31,653 | 8,643,884                  | 7,609,938  | 787,201   | 246,745 | 4,442,000                     | 3,910,666 | 404,534 | 126,800 |
| 1940 | 490,000                         | 419,440 | 58,710 | 31,850 | 9,133,884                  | 8,029,378  | 825,911   | 278,595 | 4,566,000                     | 4,013,661 | 412,670 | 139,269 |
| 1941 | 494,000                         | 417,450 | 41,498 | 35,074 | 9,627,884                  | 8,446,808  | 887,407   | 313,659 | 4,689,000                     | 4,113,799 | 422,447 | 152,764 |
| 1942 | 499,000                         | 414,170 | 45,409 | 39,421 | 10,126,884                 | 8,880,978  | 912,616   | 353,090 | 4,790,000                     | 4,191,228 | 431,761 | 167,011 |
| 1943 | 505,000                         | 414,454 | 48,791 | 42,725 | 10,632,884                 | 9,272,432  | 961,607   | 395,848 | 4,878,000                     | 4,255,072 | 441,277 | 181,681 |
| 1944 | 506,000                         | 408,342 | 55,118 | 45,540 | 11,138,884                 | 9,680,774  | 1,013,725 | 441,385 | 4,960,000                     | 4,311,684 | 451,520 | 195,598 |
| 1945 | 509,000                         | 404,655 | 55,481 | 48,884 | 11,644,884                 | 10,085,429 | 1,069,206 | 490,249 | 5,040,000                     | 4,365,055 | 462,761 | 212,184 |
| 1946 | 512,000                         | 401,408 | 59,392 | 51,200 | 12,156,884                 | 10,486,637 | 1,128,598 | 541,449 | 5,116,000                     | 4,413,192 | 474,950 | 227,658 |
| 1947 | 515,000                         | 398,095 | 62,313 | 54,590 | 12,671,884                 | 10,884,932 | 1,190,913 | 596,039 | 5,182,000                     | 4,451,250 | 487,008 | 243,742 |
| 1948 | 517,000                         | 394,998 | 65,142 | 56,870 | 13,188,884                 | 11,279,920 | 1,256,055 | 652,909 | 5,246,000                     | 4,496,692 | 499,607 | 259,701 |
| 1949 | 519,000                         | 391,645 | 67,989 | 59,166 | 13,707,884                 | 11,671,765 | 1,324,044 | 712,075 | 5,304,000                     | 4,516,163 | 512,313 | 273,824 |
| 1950 | 521,000                         | 387,624 | 71,377 | 61,999 | 14,228,884                 | 12,059,389 | 1,395,421 | 774,074 | 5,367,000                     | 4,546,687 | 526,340 | 291,973 |

1/ Column 1 total domestic market sales 1919 to 1936 represent United States production less exports, and years prior to 1919 estimated. Columns 2, 3 and 4 constitute a distribution of totals in column on the basis of data on factory sales by capacity 1919 to 1936 interpreted in the light of highway planning survey data on the 1936 and 1937 truck registrations by year models.

2/ Annual truck registrations; Totals as reported. Distribution to light, medium, and heavy on basis of estimated survivals by capacities and year models.

## 1938 SURVIVAL OF TRUCK FACTORY SALES

Source: Public Roads Administration Data

| Year              | Age | Total     | 3/4 Ton or Less | 1 - 1 1/2 Ton | 1 1/2 - 2 Ton | 2 - 2 1/2 Ton | 2 1/2 - 3 1/2 Ton | 3 1/2 - 5 Ton | 5 Ton  | 5 Ton And Over | Over 5 Ton And Special Types | Special Types |
|-------------------|-----|-----------|-----------------|---------------|---------------|---------------|-------------------|---------------|--------|----------------|------------------------------|---------------|
| 1918              | 20  | 32        | 7               | 15            | 3             | 3             | 2                 | 1             | 1      |                |                              |               |
| 1919              | 19  | 316       | 66              | 149           | 27            | 32            | 17                | 12            | 9      |                |                              | 4             |
| 1920              | 18  | 1,223     | 233             | 624           | 134           | 98            | 49                | 49            | 24     |                |                              | 12            |
| 1921              | 17  | 1,578     | 348             | 896           | 58            | 115           | 41                | 34            | 49     |                |                              | 37            |
| 1922              | 16  | 5,515     | 1,381           | 3,248         | 97            | 307           | 249               | 74            | 127    |                |                              | 32            |
| 1923              | 15  | 17,573    | 2,909           | 11,903        | 990           | 618           | 516               | 279           | 190    |                |                              | 168           |
| 1924              | 14  | 30,041    | 4,497           | 21,516        | 1,416         | 569           | 989               | 252           | 459    |                |                              | 343           |
| 1925              | 13  | 60,162    | 8,809           | 42,246        | 3,175         | 1,345         | 1,803             | 669           | 863    |                |                              | 1,252         |
| 1926              | 12  | 88,145    | 15,717          | 54,957        | 7,440         | 3,165         | 2,886             | 873           | 1,429  |                |                              | 1,678         |
| 1927              | 11  | 109,444   | 19,368          | 70,384        | 6,409         | 6,014         | 3,652             | 985           | 909    |                |                              | 1,703         |
| 1928              | 10  | 172,692   | 27,922          | 91,851        | 32,889        | 8,930         | 6,396             | 1,392         | 651    |                |                              | 2,661         |
| 1929              | 9   | 310,367   | 53,254          | 29,576        | 196,594       | 10,667        | 12,587            | 3,245         | 895    |                |                              | 3,569         |
| 1930              | 8   | 278,396   | 67,219          | 14,397        | 171,931       | 7,645         | 10,620            | 2,975         | 508    |                |                              | 3,101         |
| 1931              | 7   | 241,531   | 60,759          | 2,725         | 161,003       | 4,737         | 6,406             | 2,521         | 504    |                |                              | 2,876         |
| 1932              | 6   | 159,043   | 51,306          | 1,049         | 93,443        | 4,941         | 3,894             | 1,744         | 912    | 1,120          |                              | 1,754         |
| 1933              | 5   | 264,179   | 78,964          | 658           | 168,166       | 11,690        | 5,694             | 2,107         | 427    | 981            |                              | 2,473         |
| 1934              | 4   | 489,647   | 140,580         | 1,912         | 307,542       | 21,235        | 9,097             | 3,882         | 996    | 2,344          |                              | 4,403         |
| 1935              | 3   | 647,898   | 221,237         | 1,999         | 372,270       | 25,624        | 9,263             | 3,197         | 1,456  | 3,385          | 12,852                       | 10,923        |
| 1936              | 2   | 775,494   | 299,639         | 9,178         | 401,311       | 29,032        | 11,664            | 4,379         | 2,268  | 5,275          | 18,023                       | 15,016        |
| 1937              | 1   | 931,394   | 368,439         | 21,213        | 433,656       | 29,914        | 18,648            | 6,065         | 3,909  | 9,091          | 29,550                       | 24,368        |
| 1938              | 0   | 530,425   | 194,827         | 30,951        | 246,300       | 18,375        | 9,954             | 4,539         | 2,503  | 5,820          | 23,076                       | 19,759        |
| TOTAL             |     | 5,115,115 | 1,631,501       | 411,447       | 2,604,754     | 185,056       | 114,427           | 39,274        | 19,089 | 35,558         | 109,567                      | 93,098        |
| 1938 REGISTRATION |     | 4,224,031 | 1,347,284       | 339,770       | 2,150,990     | 152,818       | 94,493            | 32,432        | 15,764 | 29,364         | 90,480                       | 76,880        |

### CHARACTERISTICS OF SINGLE-UNIT TRUCKS

Loadmeter Data  
Source: Public Roads Administration Data

|                  | LOADED  |         |               | EMPTY   |         |             | Aver. Load Loaded. | Aver. Load all Trips |
|------------------|---------|---------|---------------|---------|---------|-------------|--------------------|----------------------|
|                  | No.     | Av. Wt. | Total Lb.     | No.     | Av. Wt. | Total Lb.   |                    |                      |
| <b>Texas</b>     |         |         |               |         |         |             |                    |                      |
| Under 1-3/4      | 71,481  | 7,766   | 556,550,716   | 55,262  | 4,514   | 249,469,738 | 3,272              | 1,845                |
| 1-3/4 - 4-3/4    | 5,122   | 12,413  | 63,577,407    | 2,495   | 7,319   | 18,246,814  | 5,094              | 3,428                |
| 5 and Over       | 165     | 22,563  | 3,722,929     | 122     | 16,173  | 1,975,093   | 6,390              | 5,674                |
| All              | 76,768  | 8,126   | 623,851,052   | 57,877  | 4,660   | 269,689,645 | 3,400              | 1,939                |
| <b>Ohio</b>      |         |         |               |         |         |             |                    |                      |
| Under 1-3/4      | 55,065  | 8,821   | 485,728,365   | 49,907  | 4,508   | 224,974,839 | 4,313              | 2,262                |
| 1-3/4 - 4-3/4    | 10,921  | 14,646  | 159,943,790   | 6,581   | 7,708   | 50,729,363  | 6,938              | 4,329                |
| 5 and Over       | 805     | 17,593  | 15,570,020    | 417     | 9,135   | 3,809,746   | 8,457              | 5,749                |
| All              | 66,871  | 9,888   | 661,242,175   | 56,905  | 4,912   | 279,513,948 | 4,798              | 2,591                |
| <b>Wisconsin</b> |         |         |               |         |         |             |                    |                      |
| Under 1-3/4      | 29,120  | 6,696   | 194,978,204   | 13,491  | 4,190   | 56,521,718  | 2,505              | 1,712                |
| 1-3/4 - 4-3/4    | 4,596   | 11,727  | 53,896,967    | 1,915   | 6,901   | 13,215,945  | 4,826              | 3,407                |
| 5 and Over       | 559     | 17,882  | 9,996,088     | 267     | 10,592  | 2,828,089   | 7,290              | 4,934                |
| All              | 34,275  | 7,553   | 258,871,259   | 15,673  | 4,630   | 72,565,752  | 2,895              | 1,986                |
| <b>Maryland</b>  |         |         |               |         |         |             |                    |                      |
| Under 1-3/4      | 11,959  | 8,602   | 102,868,996   | 7,320   | 4,751   | 34,773,674  | 3,851              | 2,389                |
| 1-3/4 - 4-3/4    | 3,743   | 14,977  | 55,663,894    | 1,586   | 7,983   | 12,681,099  | 6,894              | 4,848                |
| 5 and Over       | 486     | 21,188  | 10,297,539    | 213     | 12,899  | 2,747,580   | 8,290              | 5,764                |
| All              | 16,188  | 10,431  | 168,850,419   | 9,119   | 5,503   | 50,182,353  | 4,687              | 2,998                |
| <b>4 States</b>  |         |         |               |         |         |             |                    |                      |
| Under 1-3/4      | 167,625 | 7,995   | 1,340,126,281 | 125,980 | 4,491   | 565,740,169 | 3,504              | 2,000                |
| 1-3/4 - 4-3/4    | 24,382  | 13,652  | 333,102,048   | 12,575  | 7,543   | 94,855,221  | 6,119              | 4,037                |
| 5 and Over       | 2,095   | 18,896  | 39,566,576    | 1,019   | 11,147  | 11,358,508  | 7,749              | 5,213                |
| All              | 194,102 | 8,824   | 1,712,814,905 | 139,574 | 4,814   | 671,951,898 | 3,878              | 2,256                |

|                  | GROSS   |         |               | TARE    |         |               | Carried Load Lb. |
|------------------|---------|---------|---------------|---------|---------|---------------|------------------|
|                  | No.     | Av. Wt. | Total Lb.     | No.     | Av. Wt. | Total Lb.     |                  |
| <b>Texas</b>     |         |         |               |         |         |               |                  |
| Under 1-3/4      | 126,743 | 6,359   | 806,080,454   | 126,743 | 4,514   | 572,117,908   | 233,962,546      |
| 1-3/4 - 4-3/4    | 7,615   | 10,745  | 81,824,821    | 7,615   | 7,319   | 55,734,185    | 26,090,636       |
| 5 and Over       | 287     | 19,846  | 5,696,028     | 287     | 16,173  | 4,641,651     | 1,054,371        |
| All              | 134,645 | 6,636   | 893,540,697   | 134,645 | 4,697   | 632,493,738   | 261,046,959      |
| <b>Ohio</b>      |         |         |               |         |         |               |                  |
| Under 1-3/4      | 104,972 | 6,770   | 710,703,204   | 104,972 | 4,508   | 473,213,776   | 237,489,428      |
| 1-3/4 - 4-3/4    | 17,502  | 12,037  | 210,673,153   | 17,502  | 7,708   | 134,905,416   | 75,767,737       |
| 5 and Over       | 1,302   | 14,885  | 19,379,766    | 1,302   | 9,136   | 11,895,072    | 7,464,694        |
| All              | 123,776 | 7,600   | 940,756,123   | 123,776 | 5,009   | 620,014,264   | 320,741,359      |
| <b>Wisconsin</b> |         |         |               |         |         |               |                  |
| Under 1-3/4      | 42,611  | 5,902   | 251,499,922   | 42,611  | 4,190   | 178,540,090   | 72,959,832       |
| 1-3/4 - 4-3/4    | 6,511   | 10,308  | 67,112,918    | 6,511   | 6,901   | 44,932,411    | 22,180,501       |
| 5 and Over       | 826     | 15,526  | 12,824,177    | 826     | 10,592  | 8,748,992     | 4,075,185        |
| All              | 49,948  | 6,636   | 331,437,011   | 49,948  | 4,649   | 232,221,493   | 99,215,518       |
| <b>Maryland</b>  |         |         |               |         |         |               |                  |
| Under 1-3/4      | 19,279  | 7,140   | 137,642,870   | 19,279  | 4,751   | 91,594,529    | 46,048,341       |
| 1-3/4 - 4-3/4    | 5,329   | 12,825  | 68,344,983    | 5,329   | 7,983   | 42,541,407    | 25,803,576       |
| 5 and Over       | 699     | 18,663  | 13,045,119    | 699     | 12,899  | 9,016,401     | 4,028,718        |
| All              | 25,307  | 8,655   | 219,032,972   | 25,307  | 5,657   | 143,152,337   | 75,880,635       |
| <b>4 States</b>  |         |         |               |         |         |               |                  |
| Under 1-3/4      | 293,605 | 6,491   | 1,905,866,450 | 293,605 | 4,491   | 1,318,580,055 | 587,286,395      |
| 1-3/4 - 4-3/4    | 36,957  | 11,580  | 427,955,269   | 36,957  | 7,543   | 278,766,651   | 149,168,618      |
| 5 and Over       | 3,114   | 16,360  | 50,945,084    | 3,114   | 11,147  | 34,711,758    | 16,233,326       |
| All              | 333,676 | 7,147   | 2,384,766,803 | 333,676 | 4,891   | 1,632,058,464 | 752,708,339      |

**Initial and Stage Mileage on Federal-Aid System**—The following tabulation shows the percentage of initial and stage mileage on the Federal-aid system improved with Federal-aid funds and percentage distribution of miles of initial and stage Federal-aid improvement on the Federal-aid highway system:

| Fiscal year | Percentage of initial | Percentage of stage |
|-------------|-----------------------|---------------------|
| 1921        | 100.0                 | ....                |
| 1922        | 99.7                  | 0.3                 |
| 1923        | 99.1                  | .9                  |
| 1924        | 97.0                  | 3.0                 |
| 1925        | 95.0                  | 5.0                 |
| 1926        | 93.1                  | 6.9                 |
| 1927        | 86.0                  | 14.0                |
| 1928        | 80.4                  | 19.6                |
| 1929        | 78.0                  | 22.0                |
| 1930        | 75.7                  | 24.3                |
| 1931        | 71.4                  | 28.6                |
| 1932        | 68.6                  | 31.4                |
| 1933        | 63.8                  | 36.2                |
| 1934        | 60.6                  | 39.4                |
| 1935        | 56.7                  | 43.3                |
| 1936        | 48.7                  | 51.3                |
| 1937        | 44.0                  | 56.0                |

**Shift in Current Road Revenue**—The current revenue for all rural roads shifted as follows from 1921 to 1931:

|                              | Percent of total 1921 | 1931 |
|------------------------------|-----------------------|------|
| Property taxes               | 71                    | 35   |
| Motor-vehicle fees and taxes | 18                    | 51   |
| Federal-aid                  | 11                    | 14   |
|                              | 100                   | 100  |

**W. P. A. Road and Street Projects in 1939**—Federal expenditures on highway, road and street projects for the fiscal year 1939 amounted to \$881,448,000. The types of projects and expenditures were as follows:

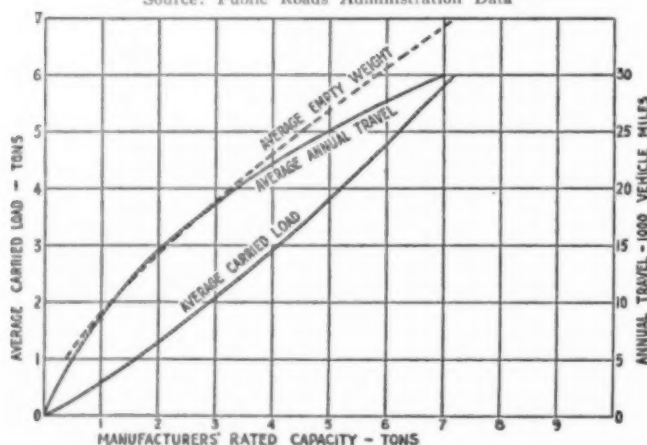
|                                     |               |
|-------------------------------------|---------------|
| Highways and rural roads            | \$203,840,000 |
| Roadside improvements               | 34,220,000    |
| Bridges and viaducts                | 6,851,000     |
| Streets and alleys                  | 167,278,000   |
| Sidewalks                           | 21,993,000    |
| Grade crossing eliminations, number | 5             |
| Other projects*                     | 447,321,000   |

\* Includes projects classifiable under more than one heading above.

### OPERATING CHARACTERISTICS OF SINGLE-UNIT AND COMBINATION TRUCKS

From an Analysis of Road Use and Loadmeter Data

Source: Public Roads Administration Data



### EXTENT AND USE OF MOTOR VEHICLES BY RAILROADS

Source: Motor Bus and Motor Truck Operation, 140 I.C.C. 685

| Item                        | Class I railroads (direct ownership) | Class I railroads subsidiaries | Class I railroads contract operations | Class II and III railroads | Class II and III railroads subsidiaries | Class II and III contract operations | Total  |
|-----------------------------|--------------------------------------|--------------------------------|---------------------------------------|----------------------------|---|--------------------------------------|--------|
| <b>Buses operated:</b>      |                                      |                                |                                       |                            |   |                                      |        |
| Line service                | 5                                    | 487                            | 1,253                                 | 9                          | 9                                       | 48                                   | 1,811  |
| Terminal service            | 3                                    | -----                          | 1,511                                 | -----                      | -----                                   | 19                                   | 1,533  |
| Route mileage, line service | 57                                   | 10,810                         | 11,440                                | 129                        | 93                                      | 398                                  | 22,927 |
| <b>Trucks operated:</b>     |                                      |                                |                                       |                            |   |                                      |        |
| Line service                | 5                                    | 41                             | 158                                   | -----                      | 2                                       | 40                                   | 246    |
| Terminal service            | 21                                   | 14                             | 1,882                                 | -----                      | -----                                   | 13                                   | 1,930  |
| Route mileage, line service | (7)                                  | 465                            | 2,980                                 | -----                      | 11                                      | 1,108                                | 4,472  |

\* Designated in report as "operated by others in connection with class I carriers."

\* Designated in report as "operated by others in connection with the class II and III carriers."

\* No data given.



# CHARACTERISTICS OF TRUCK-TRAILER AND TRAC-TRUCK SEMI-TRAILER COMBINATIONS

Loadmeter Data  
Source: Public Roads Administration Data

|                  | LOADED |         |             | EMPTY |         |            | Aver. Load Loaded | Average Carried Load All Trips |
|------------------|--------|---------|-------------|-------|---------|------------|-------------------|--------------------------------|
|                  | No.    | Av. Wt. | Total Lb.   | No.   | Av. Wt. | Total Lb.  |                   |                                |
| <b>Wisconsin</b> |        |         |             |       |         |            |                   |                                |
| Under 5          | 869    | 19,025  | 16,553,019  | 320   | 9,253   | 2,961,002  | 9,795             | 7,159                          |
| 5 and Over       | 9,367  | 26,210  | 245,512,095 | 1,976 | 12,850  | 25,392,438 | 13,360            | 11,033                         |
| All              | 10,236 | 25,602  | 262,065,114 | 2,296 | 12,349  | 28,353,440 | 13,058            | 10,665                         |
| <b>Maryland</b>  |        |         |             |       |         |            |                   |                                |
| Under 5          | 520    | 24,999  | 12,999,399  | 239   | 11,051  | 2,641,136  | 13,948            | 9,556                          |
| 5 and Over       | 1,389  | 28,939  | 40,196,256  | 469   | 13,641  | 6,670,277  | 15,298            | 11,315                         |
| All              | 1,909  | 27,866  | 53,195,655  | 728   | 12,790  | 9,311,413  | 14,930            | 10,808                         |
| <b>2 States</b>  |        |         |             |       |         |            |                   |                                |
| Under 5          | 1,389  | 21,276  | 29,552,418  | 559   | 10,022  | 5,602,138  | 11,254            | 8,024                          |
| 5 and Over       | 10,756 | 26,563  | 285,708,351 | 2,465 | 13,007  | 32,062,715 | 13,556            | 11,028                         |
| All              | 12,145 | 25,968  | 315,260,769 | 3,024 | 12,455  | 37,664,853 | 13,292            | 10,643                         |

|                  | GROSS  |         |             | TARE   |         |             | Carried Load Lb. |
|------------------|--------|---------|-------------|--------|---------|-------------|------------------|
|                  | No.    | Av. Wt. | Total Lb.   | No.    | Av. Wt. | Total Lb.   |                  |
| <b>Wisconsin</b> |        |         |             |        |         |             |                  |
| Under 5          | 1,189  | 16,412  | 19,514,021  | 1,189  | 9,253   | 11,001,817  | 8,512,204        |
| 5 and Over       | 11,343 | 23,883  | 270,904,533 | 11,343 | 12,850  | 145,757,550 | 125,146,983      |
| All              | 12,532 | 12,174  | 290,418,554 | 12,532 | 12,509  | 156,759,367 | 133,659,187      |
| <b>Maryland</b>  |        |         |             |        |         |             |                  |
| Under 5          | 759    | 20,807  | 15,640,535  | 759    | 11,051  | 8,387,709   | 7,252,826        |
| 5 and Over       | 1,878  | 24,956  | 46,866,533  | 1,878  | 13,641  | 25,617,798  | 21,248,735       |
| All              | 2,637  | 23,704  | 62,507,068  | 2,637  | 12,896  | 34,005,507  | 28,501,561       |
| <b>2 States</b>  |        |         |             |        |         |             |                  |
| Under 5          | 1,948  | 18,046  | 35,153,556  | 1,948  | 10,022  | 19,522,856  | 15,631,700       |
| 5 and Over       | 13,221 | 24,035  | 317,771,066 | 13,221 | 13,007  | 171,965,547 | 145,805,519      |
| All              | 15,169 | 23,266  | 352,925,622 | 15,169 | 12,624  | 191,488,403 | 161,437,219      |

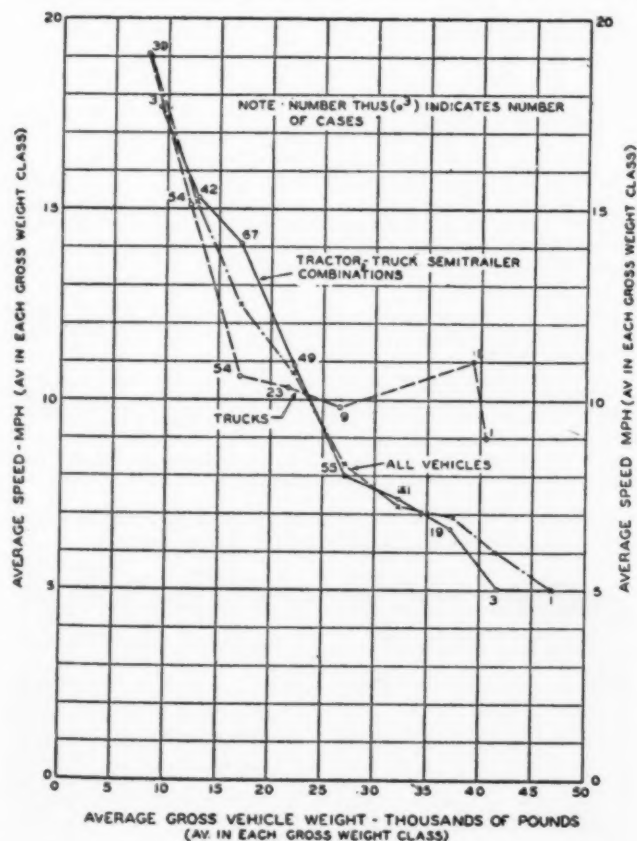
**Toll Stops Within 50 Miles of New York**—There are at least 16 toll stops within 50 miles of New York City. These include the following, with their prices: Henry Hudson Bridge, 10c; Fleetwood Bridge, 10c; Merritt Parkway, 10c; Perkins Memorial Drive (up Bear Mountain), 10c; Marine Parkway Bridge (Brooklyn to Rockaway), 10c; Far Rockaway-Atlantic Beach Bridge, 25c; Whitestone Bridge (Queens to the Bronx), 25c; Triborough Bridge, 25c; the Jones Beach Causeways, 25c; Holland Tunnel, 50c; Lincoln Tunnel, 50c; George Washington Bridge, 50c; Bayonne Bridge (Staten Island to Bayonne), 50c; Goethals Bridge (Staten Island to Elizabeth), 50c; Outerbridge Crossing (Staten Island to Perth Amboy), 50c; Bear Mountain Bridge, 80c for car and driver, plus 10c for each passenger.

**Expenditures on Blue Ridge and Natchez Trace Parkways**—Up to Feb. 1 1940, \$18,628,700 had been expended on the Blue Ridge Parkway in North Carolina and Virginia and \$4,554,066 had been spent on the Natchez Trace Parkway in Alabama, Mississippi and Tennessee. Of the total expenditures on the Blue Ridge Parkway, \$17,036,406 were from Federal funds and the remainder was state costs. On the Natchez Trace Parkway the Federal costs were \$3,811,106, and the state costs were \$742,960.

## VARIATION OF SPEED WITH GROSS WEIGHT

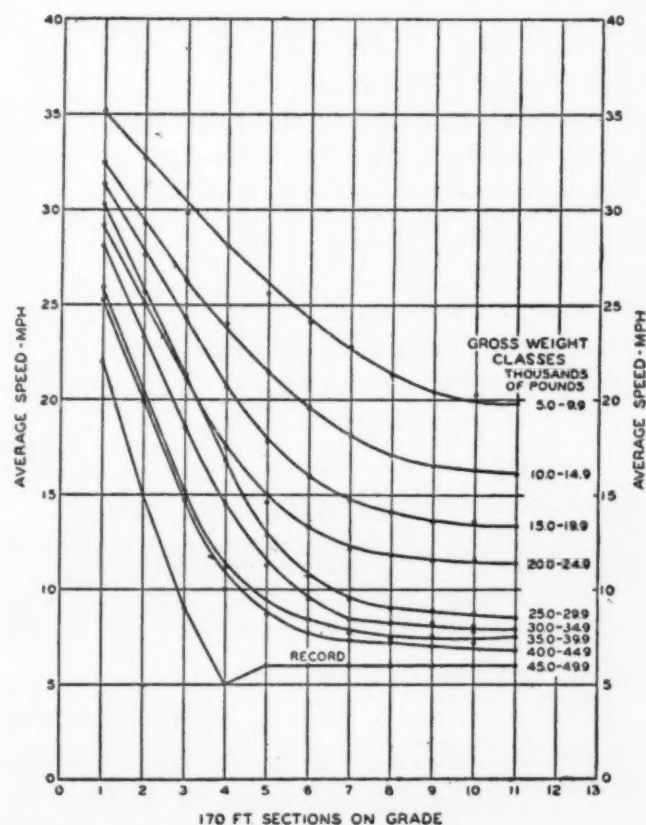
Minimum Speed on a Six Per Cent Grade

Source: U. S. Bureau of Public Roads—Division of Highway Transport



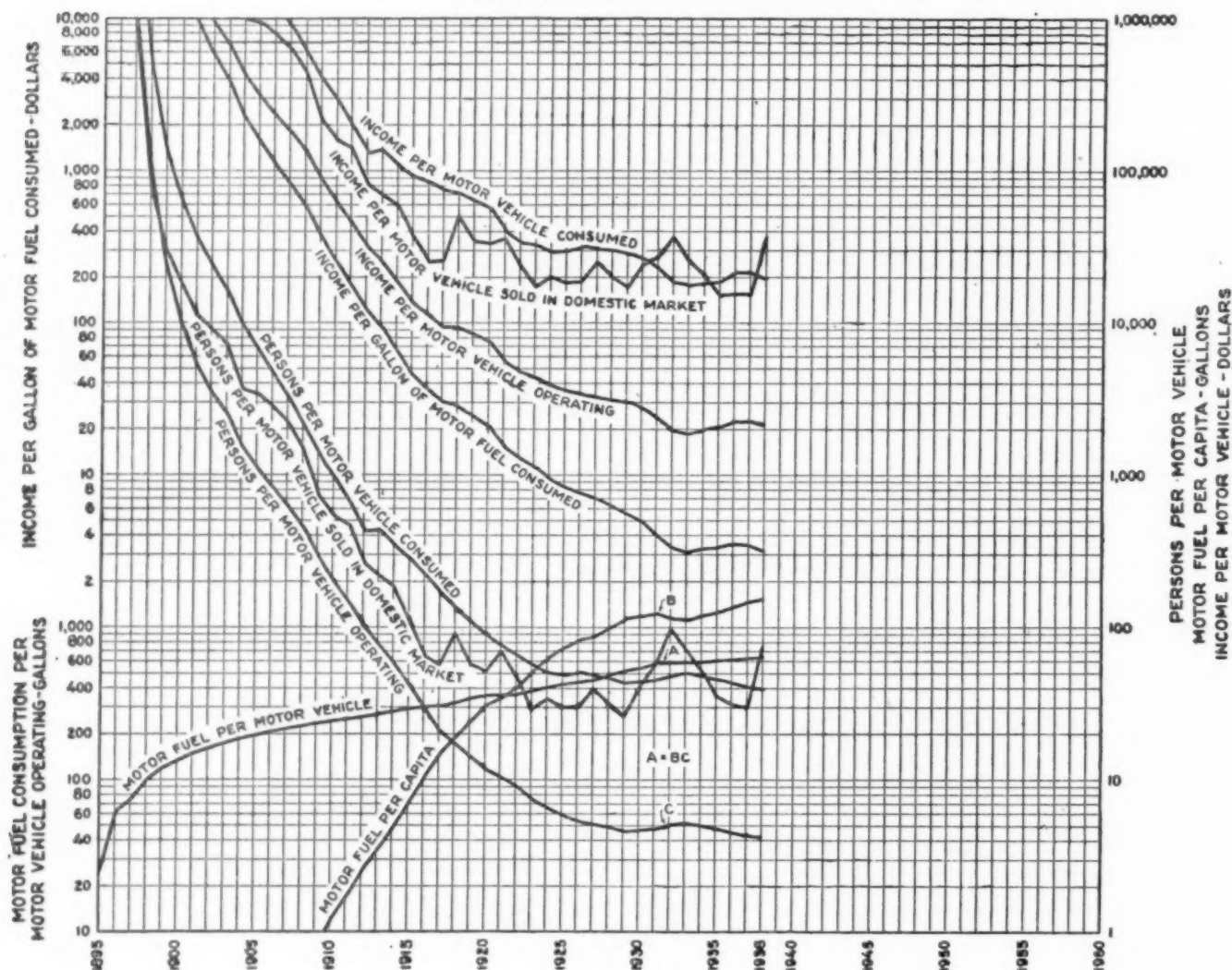
## VARIATION OF SPEED ON A SIX PER CENT GRADE

Source: U. S. Bureau of Public Roads—Division of Highway Transport



# TRENDS IN TYPICAL INTERRELATIONSHIPS OF BASIC ANNUAL DATA ON MOTOR VEHICLE MANUFACTURE AND USE

Source: Public Roads Administration Data



## STATE MOTOR-VEHICLE REGISTRATIONS—1939

Source: Public Roads Administration, Issued May 1, 1940

|   |            |
|---|------------|
| Total Registered Motor Vehicles, Public, Private and Commercial     | 31,009,870 |
| Private and Commercial Vehicles                                     |            |
| Motor Vehicles:   |            |
| Total motor vehicles  | 30,615,087 |
| Passenger motor vehicles:   |            |
| Total   | 26,201,395 |
| Automobiles (including taxicabs)                                    | 26,142,144 |
| Motor busses  | 59,251     |
| Motor trucks, tractors trucks, etc.                                 | 4,413,692  |
| Other Registered Vehicles:  |            |
| Trailers and semi-trailers  | 1,193,085  |
| Motorcycles   | 117,619    |
| Publicly Owned Vehicles   |            |
| Federal:  |            |
| Motor vehicles  | 121,270    |
| Trailers and semi-trailers  | 4,071      |
| State, County, and Municipal:                                       |            |
| Motor vehicles  | 273,513    |
| Trailers, and semi-trailers   | 9,528      |
| Motorcycles   | 7,628      |
| Dealers' Registrations and Plates                                   |            |
| Regular Registrations   | 142,034    |
| Extra Sets of Plates  | 82,403     |
| 1938 Total Registered Motor Vehicles, Private and Commercial Only   | 29,485,680 |
| Year's Change in Private and Commercial Motor-Vehicle Registrations |            |
| Increase or Decrease  | 1,129,407  |
| Percentage Change   | 3.8        |

## MOTOR-FUEL CONSUMPTION—1939

Source: Public Roads Administration, Issued May 1, 1940

|   |                |
|---|----------------|
| Tax Rate Per Gallon on Dec. 31, 1939        | \$0.0396       |
| Gross Amount Reported                       | 22,685,056,000 |
| Amount Exempted from Payment of Tax         | 703,604,000    |
| Gross Amount Assessed for Taxation          | 21,981,452,000 |
| Amount Subject to Refund of Entire Tax      | 1,214,939,000  |
| Net Amount Taxed:                           |                |
| Total                                       | 20,766,513,000 |
| At prevailing rate                          | 20,638,398,000 |
| At other rates:                             |                |
| Rate per gallon                             |                |
| Amount                                      | 128,115,000    |
| Amount Taxed at Prevailing Rate During 1939 | 19,504,621,000 |
| Increase or Decrease During 1939:           |                |
| Amount                                      | 1,133,777,000  |
| Percent                                     | 5.8            |

## ANNUAL MILEAGE DECREASES WITH AGE OF CAR

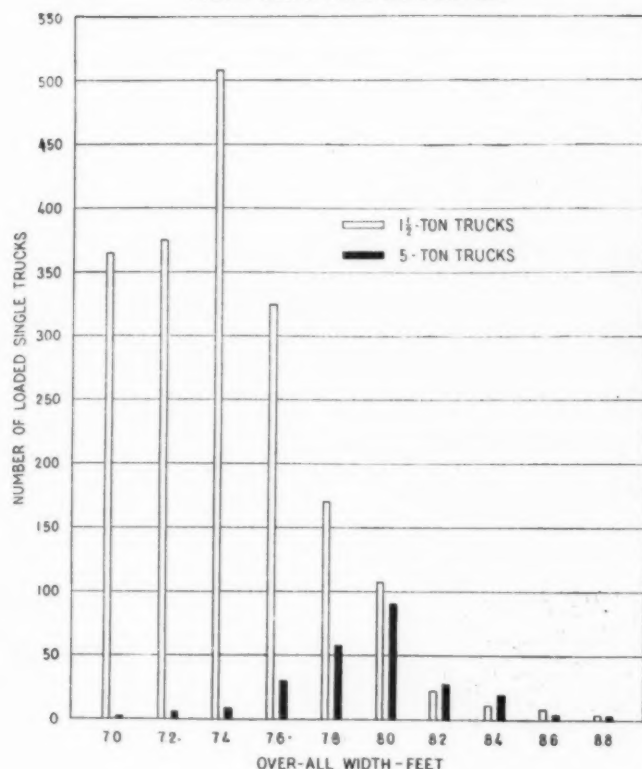
Source: Automobile Facts and Figures, 1939

| Age in Years | Annual Mileage | Age in Years      | Annual Mileage |
|--------------|----------------|-------------------|----------------|
| 1            | 13,000         | 9                 | 5,400          |
| 2            | 11,800         | 10                | 4,700          |
| 3            | 10,600         | 11                | 4,100          |
| 4            | 9,600          | 12                | 3,600          |
| 5            | 8,700          | 13                | 3,100          |
| 6            | 7,800          | 14                | 2,700          |
| 7            | 6,900          | 15                | 2,400          |
| 8            | 6,100          | Average, all ages | 8,860          |

(1)—From Preliminary Data Obtained in Statewide Highway Planning Surveys in 15 States in Cooperation With the U. S. Bureau of Public Roads

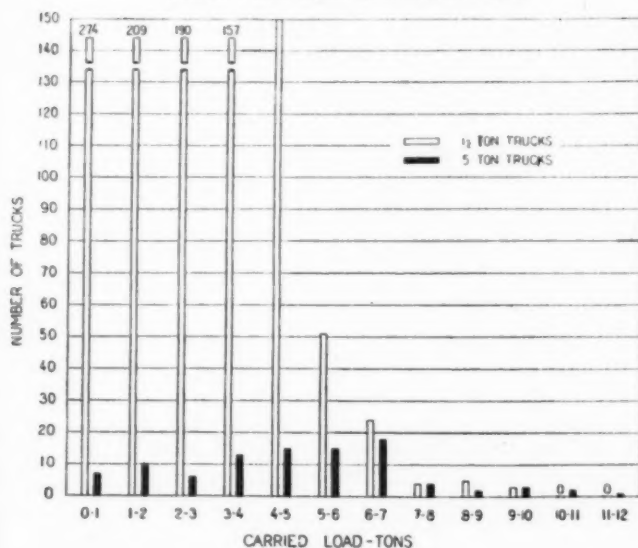
### WIDTHS OF LOADED SINGLE TRUCKS OF TWO RATED CAPACITIES

Source: Public Roads Administration



### LOADS CARRIED BY TWO RATED CAPACITIES OF TRUCKS

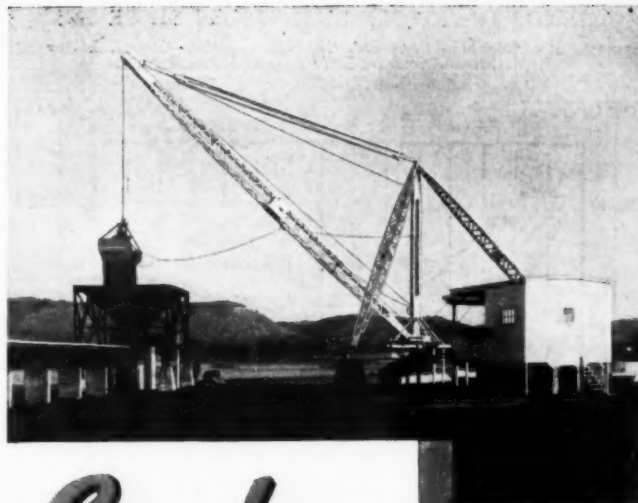
Source: Public Roads Administration Data



### VISITORS TO NATIONAL PARKS AND MONUMENTS

Source: Hearings on H. R. 7891—76th Congress

|   | 1934             | 1938              | 1939              |
|---|------------------|-------------------|-------------------|
| Visitors to national parks.....               | 3,965,720        | 6,571,330         | 6,804,216         |
| Visitors to national monuments.....           | 1,170,418        | 2,313,630         | 2,566,452         |
| Visitors to national historical parks.....    | 30,343           | 864,796           | 683,194           |
| Visitors to national military parks.....      | 1,116,037        | 2,877,655         | 2,008,121         |
| Visitors to national battlefield sites.....   | 37,678           | 152,974           | 128,618           |
| Visitors to miscellaneous memorials.....      | 17,010           | 2,888,503         | 2,650,871         |
| Visitors to Boulder.....                      |                  | 564,800           | 611,895           |
| Visitors to Salem Maritime Historic Site..... |                  |                   | 1,000             |
| <b>Total.....</b>                             | <b>6,337,206</b> | <b>16,233,688</b> | <b>15,454,367</b> |



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STANDARDIZE on the Genuine **CROSBY CLIP**

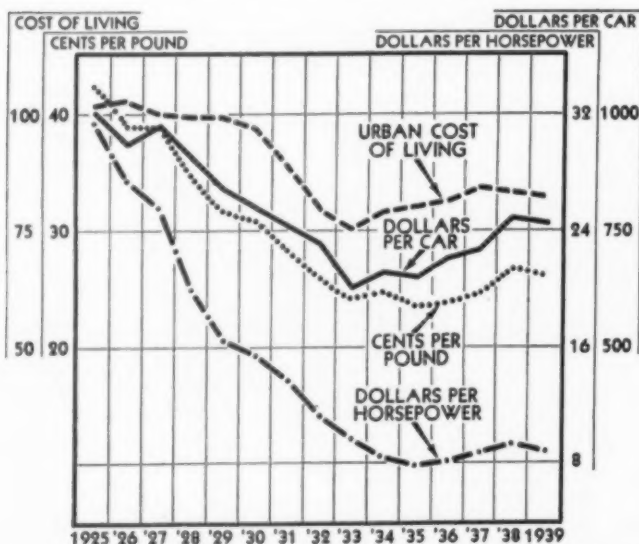
PERFECT GRIP • DROP FORGED STEEL • HOT DIP GALVANIZED

DEALERS WITH STOCK IN ALL PRINCIPAL CITIES



## TRENDS IN AUTOMOBILE PRICES SINCE 1925

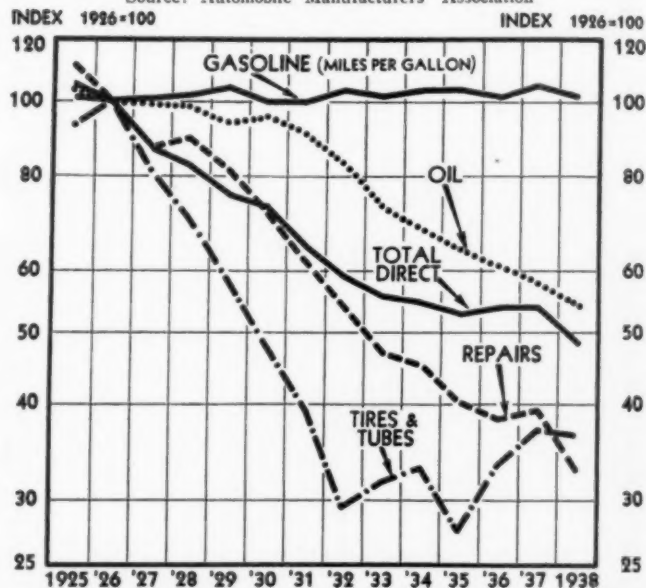
Source: Automobile Manufacturers' Association, Urban Cost of Living all U. S. Cities—From U. S. Bureau of Labor Statistics



Note: Average Prices are based on the delivered price at factory (including standard equipment and federal taxes) of the cheapest 4 or 5 passenger closed model of each make and are weighted by the relative total number of new car registrations of each make. Delivered price prior to 1936 computed from ratio of factory list price to delivered price in 1936 and 1937.

## TRENDS IN AUTOMOBILE OPERATING COSTS SINCE 1925

Source: Automobile Manufacturers' Association



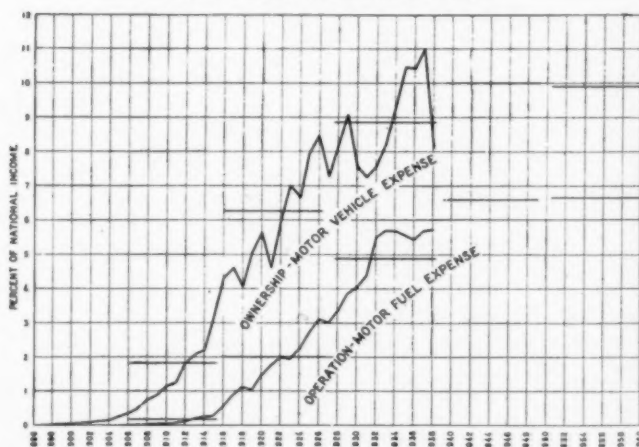
Note: Total Direct is Gasoline, Oil, Tires and Tubes, and Repairs Only. Gasoline is the Only Series Not on a Cost per Mile Basis. This Series Includes Those Fleets Which Reported Gasoline Cost as Well as Those Reporting Consumption. Average Gasoline Prices in 50 Cities, Published by the American Petroleum Institute, Were Used in Reducing Dollar Costs to Gallons Before Combining. Indexes are Cumulative Geometric Averages of Link Relatives. This Was Considered the Most Practical Type of Average, as All Fleets Did Not Report Figures For All Years. Only 5 Fleets Had Comparable Data to 1926.

## INTERRELATIONSHIPS IN BASIC MOTOR VEHICLE DATA

Source: From Public Roads Administration Data

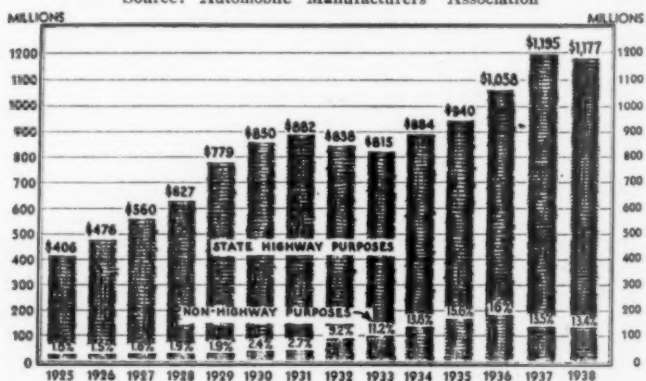
| Persons Per Vehicle | National Income Per Capita | Motor Fuel Per Capita | Motor Fuel Per Vehicle Operating | National Income Per Gallon Of Motor Fuel | Year |
|---------------------|----------------------------|-----------------------|----------------------------------|--|------|
| 17,395,000          | 189                        | 0                     | 48                               | 15,628,000.                              | 1895 |
| 4,430,313           | 192                        | 0                     | 63                               | 2,025,426                                | 1896 |
| 802,100             | 196                        | 0                     | 78                               | 184,401                                  | 1897 |
| 91,866              | 201                        | 0                     | 100                              | 40,010                                   | 1898 |
| 23,375              | 205                        | 0.01                  | 120                              |  | 1899 |
| 9,760               | 212                        | 0.01                  | 135                              | 15,345                                   | 1900 |
| 5,253               | 221                        | 0.05                  | 150                              | 7,734                                    | 1901 |
| 3,451               | 232                        | 0.05                  | 163                              | 4,920                                    | 1902 |
| 2,460               | 245                        | 0.07                  | 175                              | 3,401                                    | 1903 |
| 1,502               | 243                        | 0.12                  | 187                              | 1,953                                    | 1904 |
| 1,080               | 254                        | 0.18                  | 199                              | 1,380                                    | 1905 |
| 808                 | 270                        | 0.26                  | 208                              | 1,041                                    | 1906 |
| 616                 | 279                        | 0.35                  | 217                              | 792                                      | 1907 |
| 451                 | 283                        | 0.50                  | 225                              | 558                                      | 1908 |
| 291                 | 292                        | 0.81                  | 235                              | 361                                      | 1909 |
| 197                 | 305                        | 1.24                  | 244                              | 246                                      | 1910 |
| 146                 | 300                        | 1.75                  | 254                              | 175                                      | 1911 |
| 101                 | 309                        | 2.40                  | 262                              | 119                                      | 1912 |
| 78.7                | 326                        | 3.55                  | 272                              | 91.91                                    | 1913 |
| 57.2                | 319                        | 4.98                  | 285                              | 64.00                                    | 1914 |
| 40.6                | 327                        | 7.34                  | 295                              | 44.84                                    | 1915 |
| 28.7                | 334                        | 10.7                  | 306                              | 36.04                                    | 1916 |
| 20.5                | 454                        | 15.1                  | 310                              | 30.02                                    | 1917 |
| 16.9                | 550                        | 19.5                  | 329                              | 28.16                                    | 1918 |
| 13.9                | 599                        | 25.1                  | 346                              | 25.91                                    | 1919 |
| 11.5                | 642                        | 31.8                  | 360                              | 20.59                                    | 1920 |
| 10.4                | 524                        | 35.0                  | 363                              | 14.93                                    | 1921 |
| 8.98                | 520                        | 41.0                  | 368                              | 12.69                                    | 1922 |
| 7.40                | 599                        | 52.4                  | 368                              | 11.11                                    | 1923 |
| 6.45                | 592                        | 63.9                  | 412                              | 9.22                                     | 1924 |
| 5.76                | 610                        | 74.4                  | 429                              | 6.16                                     | 1925 |
| 5.29                | 631                        | 85.6                  | 442                              | 7.51                                     | 1926 |
| 5.06                | 626                        | 89.6                  | 455                              | 6.98                                     | 1927 |
| 4.67                | 633                        | 102                   | 465                              | 6.22                                     | 1928 |
| 4.56                | 654                        | 117                   | 532                              | 5.61                                     | 1929 |
| 4.61                | 598                        | 120                   | 558                              | 4.91                                     | 1930 |
| 4.78                | 485                        | 124                   | 593                              | 3.91                                     | 1931 |
| 5.14                | 374                        | 114                   | 566                              | 3.28                                     | 1932 |
| 8.22                | 356                        | 113                   | 590                              | 3.14                                     | 1933 |
| 5.02                | 407                        | 121                   | 606                              | 3.37                                     | 1934 |
| 4.61                | 441                        | 128                   | 613                              | 3.46                                     | 1935 |
| 4.50                | 508                        | 139                   | 626                              | 3.65                                     | 1936 |
| 4.30                | 537                        | 149                   | 640                              | 3.61                                     | 1937 |
| 4.36                | 480                        | 150                   | 653                              | 3.20                                     | 1938 |

Motor Trucks in 1939—During 1939 4,460,000 motor trucks were in use. The total special motor truck taxes amounted to \$421,000,000. The number of truck drivers was 3,760,000.

PER CENT OF NATIONAL INCOME  
Annual Trend With Trend in 11-Year Plateaus  
Source: Public Roads Administration

## ONE OUT OF EVERY EIGHT AUTOMOBILE TAX DOLLARS USED FOR NON-HIGHWAY PURPOSES

Source: Automobile Manufacturers' Association



Note: Taxes Include State Motor Vehicle Registration Receipts, Special Motor Carrier Taxes, and Gas Taxes



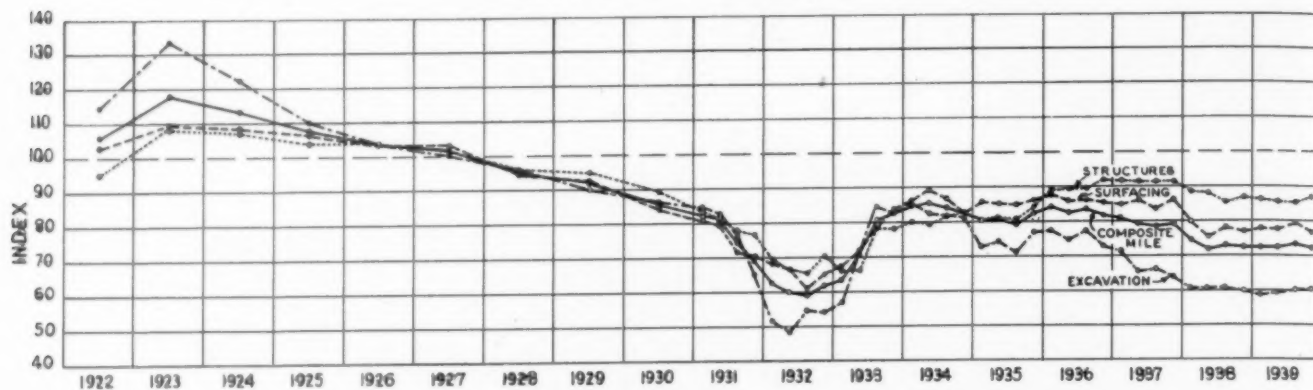
"Tractionized" Tarvia pavement is lastingly smooth and skid-safe—the kind of road motorists like to travel.

THE BARRETT COMPANY... ONE OF AMERICA'S GREAT BASIC BUSINESSES

New York, Chicago, Birmingham, St. Louis, Detroit, Philadelphia, Boston, Providence, Lebanon, Pa., Rochester, Baltimore, Minneapolis, Cleveland, Columbus, Toledo, Youngstown, Syracuse, Hartford, Buffalo, Cincinnati, Bethlehem, Portland, Me., Norwood, N. Y. In Canada: THE BARRETT COMPANY, LTD., Montreal, Toronto, Winnipeg, Vancouver

## CONSOLIDATED INDEX OF HIGHWAY CONSTRUCTION PRICE TRENDS

Source: Public Roads Administration



## COST OF RIGHT-OF-WAY ON STATE HIGHWAY SYSTEMS BY STATES BY YEARS

Source: American Association of State Highway Officials in Hearings on H. R. 7891

| State          | 1930       | 1931       | 1932       | 1933       | 1934        | 1935       | 1936       | 1937       | 1938       | 1939.      | Total       |
|----------------|------------|------------|------------|------------|-------------|------------|------------|------------|------------|------------|-------------|
| Alabama        |            |            |            |            |             | \$110,000  | \$140,000  | \$425,000  | \$360,000  | \$250,000  | \$1,285,000 |
| Arizona        | \$54,135   | \$70,380   | \$38,689   | \$41,699   | \$56,175    | 89,335     | 77,829     | 82,340     | 94,064     | 57,118     | 2,162,135   |
| Arkansas       | 451,509    | 275,677    | 37,735     | 215,922    | 254,544     | 208,064    | 262,578    | 128,575    | 235,086    | 82,455     | 3,045,562   |
| California     | 2,500,306  | 1,886,839  | 2,516,411  | 3,027,910  | 3,450,721   | 4,234,925  | 4,210,390  | 3,550,437  | 3,325,829  | 1,981,794  | 20,745,562  |
| Colorado       |            |            |            |            | 715,104     | 136,448    | 350,953    | 394,043    | 375,704    | 311,142    | 2,286,364   |
| Connecticut    | 705,434    | 817,716    | 1,717,386  | 1,098,144  | 2,242,338   | 1,018,437  | 1,832,544  | 1,270,197  | 506,735    | 607,320    | 11,816,251  |
| Delaware       |            |            |            |            | 321,516     | 116,904    | 68,494     | 40,940     | 65,277     |            | 613,131     |
| Florida        | 106,822    | 142,317    | 127,954    | 117,830    | 144,081     | 167,215    | 187,637    | 360,197    | 308,649    | 389,102    | 2,063,804   |
| Georgia        | 65,539     | 49,162     | 115,605    | 67,339     | 49,131      | 127,513    | 116,411    | 120,979    | 214,618    | 228,590    | 1,144,887   |
| Idaho          |            |            |            |            | 387,343     | 71,981     | 161,940    | 115,227    | 48,675     | 159,624    | 944,790     |
| Illinois       | 916,612    | 1,107,381  | 807,966    | 454,729    | 508,786     | 834,000    | 664,548    | 728,897    | 1,029,768  | 888,382    | 7,941,129   |
| Indiana        |            | 1,006,996  |            |            | 2,134,039   | 803,500    | 1,355,190  | 663,785    | 815,490    | 762,827    | 15,472,017  |
| Iowa           |            |            |            |            | 12,160,036  | 644,002    | 549,270    | 628,534    | 626,475    | 953,700    | 8,687,328   |
| Kansas         |            |            |            |            |             |            | 1,662,903  | 803,538    | 544,525    | 676,642    | 1,357,800   |
| Kentucky       | 225,000    |            | 244,800    |            |             | 235,200    | 216,000    | 99,000     | 217,800    |            | 1,813,000   |
| Louisiana      |            |            |            |            |             |            |            |            |            |            | 980,103     |
| Maine          | 63,168     | 98,290     | 102,270    | 56,153     | 16,551      | 72,487     | 183,329    | 164,913    | 132,073    | 90,499     | 4,064,587   |
| Maryland       | 411,092    | 414,128    | 638,492    | 134,033    | 656,776     | 336,476    | 614,112    | 283,899    | 375,379    |            | 9,186,063   |
| Massachusetts  | 344,087    | 646,543    | 1,420,993  | 1,338,589  | 1,553,319   | 1,100,742  | 977,229    | 769,149    | 549,169    | 486,244    | 37,337,303  |
| Michigan       | 2,652,267  | 3,972,299  | 3,916,428  | 2,473,859  | 1,638,669   | 2,488,567  | 3,238,755  | 1,640,784  | 2,419,641  | 2,336,236  | 15,313,662  |
| Minnesota      | 2,065,162  | 2,977,484  | 1,917,171  | 1,219,706  | 1,039,824   | 1,109,008  | 1,291,115  | 1,520,536  | 1,469,195  | 703,769    | 4,802,422   |
| Mississippi    |            | 185,570    | 116,107    | 152,110    | 345,080     | 431,005    | 466,306    | 1,243,105  | 783,146    | 1,079,213  | 7,899,766   |
| Missouri       | 1,225,506  | 1,155,222  | 1,317,252  | 1,253,000  | 1,155,236   | 288,915    | 706,899    | 146,070    | 333,196    | 320,467    | 2,379,733   |
| Montana        | 244,690    | 354,383    | 225,981    | 370,417    | 260,490     | 159,598    | 302,005    | 166,145    | 138,299    | 157,115    | 3,217,121   |
| Nebraska       | 130,554    | 287,778    | 420,130    | 280,948    | 301,541     | 508,188    | 248,462    | 329,871    | 389,472    | 46,074     | 365,882     |
| Nevada         |            |            |            | 41,557     | 27,794      | 22,904     | 53,543     | 160,465    | 33,545     |            | 792,920     |
| New Hampshire  |            |            |            | 68,850     | 103,353     | 127,890    | 129,088    | 120,028    | 103,076    | 130,661    | 42,837,100  |
| New Jersey     | 5,586,632  | 8,151,414  | 12,244,049 | 4,899,158  | 2,826,892   | 2,189,966  | 1,869,656  | 1,790,818  | 1,083,414  | 2,195,090  | 61,461      |
| New Mexico     |            |            |            |            |             |            |            |            |            |            | 13,628,784  |
| New York       |            |            | 88,776     | 50,714     | 3,648,071   | 2,749,695  | 2,020,361  | 1,979,812  | 170,286    | 216,199    | 258,529     |
| North Carolina |            |            |            |            | 67,005      | 68,650     | 69,018     | 54,835     | 62,655     | 100,000    | 989,177     |
| North Dakota   |            |            |            |            | 3,222,536   | 79,557     | 95,093     | 54,835     | 62,655     | 100,000    | 7,044,478   |
| Ohio           | 383,310    | 645,921    | 1,174,357  | 463,112    | 530,336     | 404,090    | 894,704    | 826,836    | 814,876    | 1,175,071  | 7,342,613   |
| Oklahoma       |            |            |            |            |             | 178,942    | 350,196    | 367,565    | 384,422    | 161,871    | 1,442,996   |
| Oregon         |            |            |            |            | 639,592     | 159,040    | 132,572    | 685,941    | 581,755    | 554,687    | 2,753,587   |
| Pennsylvania   |            |            |            |            | 112,020,172 | 1,372,455  | 1,427,942  | 2,364,117  | 2,821,891  | 2,366,736  | 22,373,223  |
| Rhode Island   | 180,000    | 250,000    | 150,000    | 150,000    | 150,000     | 234,000    | 340,000    | 155,000    | 77,000     | 80,000     | 1,772,000   |
| South Carolina |            |            | 453,612    | 170,988    | 76,232      | 80,635     | 105,227    | 499,776    | 474,048    | 2,213,510  | 450,000     |
| South Dakota   |            |            |            | 29,000     | 77,000      | 84,000     | 74,000     | 96,000     |            |            | (U)         |
| Tennessee      |            |            |            |            | 7,764,593   | 1,018,681  | 1,571,132  | 1,095,948  | 1,246,886  | 1,171,841  | 13,890,861  |
| Texas          |            |            |            |            |             |            |            |            |            |            | \$1,325,075 |
| Utah           | \$65,299   | \$95,534   | \$90,065   | \$97,682   | \$112,539   | \$202,596  | \$282,962  | \$149,919  | \$139,781  | \$147,725  | 269,925     |
| Vermont        |            | 15,916     | 27,181     | 41,430     | 11,061      | 33,205     | 50,252     | 81,863     | 39,087     |            | 8,889,290   |
| Virginia       | 814,613    | 1,018,208  | 722,638    | 740,660    | 739,915     | 471,092    | 560,613    | 512,203    | 817,990    | 691,946    | 4,648,393   |
| Washington     | 454,462    | 356,941    | 938,811    | 524,254    | 315,475     | 829,968    | 182,180    | 252,978    | 306,470    | 784,836    | 4,580,482   |
| West Virginia  | 416,048    | 468,833    | 494,833    | 291,588    | 97,890      | 404,370    | 484,751    | 526,000    | 576,222    | 820,917    | 8,147,141   |
| Wisconsin      | 752,218    | 986,709    | 1,479,612  | 1,062,805  | 416,644     | 489,202    | 795,096    | 807,431    | 643,638    | 711,786    | 355,440     |
| Wyoming        | 7,043      | 8,818      | 12,487     | 52,721     | 27,148      | 90,243     | 72,809     | 47,222     | 40,412     | 29,537     |             |
| Total          | 20,672,907 | 27,422,668 | 33,787,821 | 25,022,879 | 56,657,940  | 26,342,698 | 31,390,161 | 28,178,388 | 26,044,800 | 24,645,614 | 314,516,668 |

1 1930-34, inclusive.

2 1929-33, inclusive.

3 1930-31.

4 1932-33 and 34.

5 1935-36.

6 For 10-year period.

7 Includes \$10,539,802 county expenditures not distributed by years.

NOTE.—Columns containing no amounts mean no report available for those years.

8 6 months.

9 1930-34.

10 1929-33.

11 1930-34.

12 No report.

13 1930-34.

## VALUE OF ALL CONSTRUCTION, 1919 TO 1938

Source: National Bureau of Economic Research and U. S. Bureau of Labor Statistics

(In millions of dollars)

| Year | Total  | Residential | Private nonresidential | Public Works | Year | Total   | Residential | Private nonresidential | Public Works |
|------|--------|-------------|------------------------|--------------|------|---------|-------------|------------------------|--------------|
| 1919 | 5,916  | 1,732       | 2,702                  | 1,422        | 1929 | 10,519  | 3,010       | 4,581                  | 2,928        |
| 1920 | 6,336  | 1,439       | 3,129                  | 1,714        | 1930 | 8,628   | 1,805       | 3,800                  | 3,023        |
| 1921 | 6,105  | 2,241       | 2,186                  | 1,678        | 1931 | 6,109   | 1,262       | 2,222                  | 2,615        |
| 1922 | 8,303  | 3,324       | 2,785                  | 2,078        | 1932 | 454,462 | 3,496       | 444                    | 1,967        |
| 1923 | 9,643  | 4,422       | 3,300                  | 1,921        | 1933 | 2,230   | 392         | 998                    | 1,902        |
| 1924 | 10,490 | 4,713       | 3,313                  | 2,364        | 1934 | 4,364   | 458         | 1,180                  | 2,726        |
| 1925 | 11,810 | 5,202       | 4,062                  | 2,546        | 1935 | 5,086   | 923         | 1,461                  | 2,694        |
| 1926 | 11,580 | 4,767       | 4,368                  | 2,470        | 1936 | 7,065   | 1,656       | 2,138                  | 3,299        |
| 1927 | 11,767 | 4,534       | 4,477                  | 2,756        | 1937 | 8,257   | 1,719       | 3,341                  | 3,197        |
| 1928 | 11,572 | 4,255       | 4,365                  | 2,932        | 1938 | 8,054   | 1,846       | 2,903                  | 3,705        |

Source: National Bureau of Economic Research, 1919 to 1933, and B.L.S., 1934 to 1938.

## DAILY TEMPERATURE RANGE

In Degrees F.

Source: U. S. Weather Bureau Computations

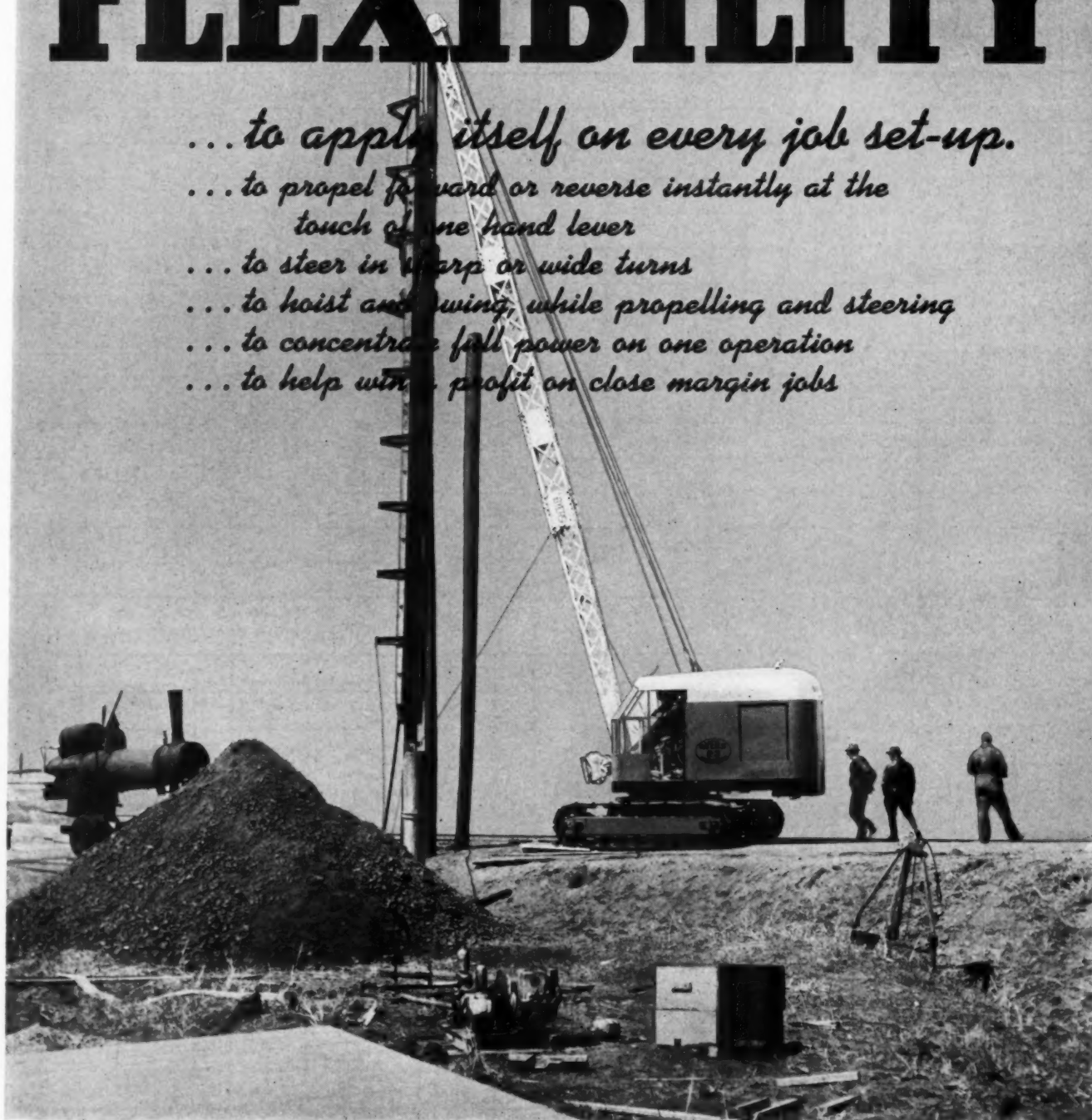
| Place         | Period Of Record Years | Average Daily Maximum | Average Daily Minimum | Average Daily Range |
|---------------|------------------------|-----------------------|-----------------------|---------------------|
| San Francisco | 59                     | 62.4                  | 50.2                  | 12.2                |
| New Orleans   | 59                     | 76.9                  | 62.0                  | 14.9                |
| St. Louis     | 58                     |                       |                       | 17.0                |
| Chicago       | 62                     | 56.6                  | 41.8                  | 14.8                |
| New York City | 46                     | 59.5                  | 45.0                  | 14.6                |

Note: These Figures Provide the Average Daily Range and Not the Extremes



# FLEXIBILITY

- ... to apply itself on every job set-up.*
- ... to propel forward or reverse instantly at the touch of one hand lever*
- ... to steer in sharp or wide turns*
- ... to hoist and swing, while propelling and steering*
- ... to concentrate full power on one operation*
- ... to help win a profit on close margin jobs*

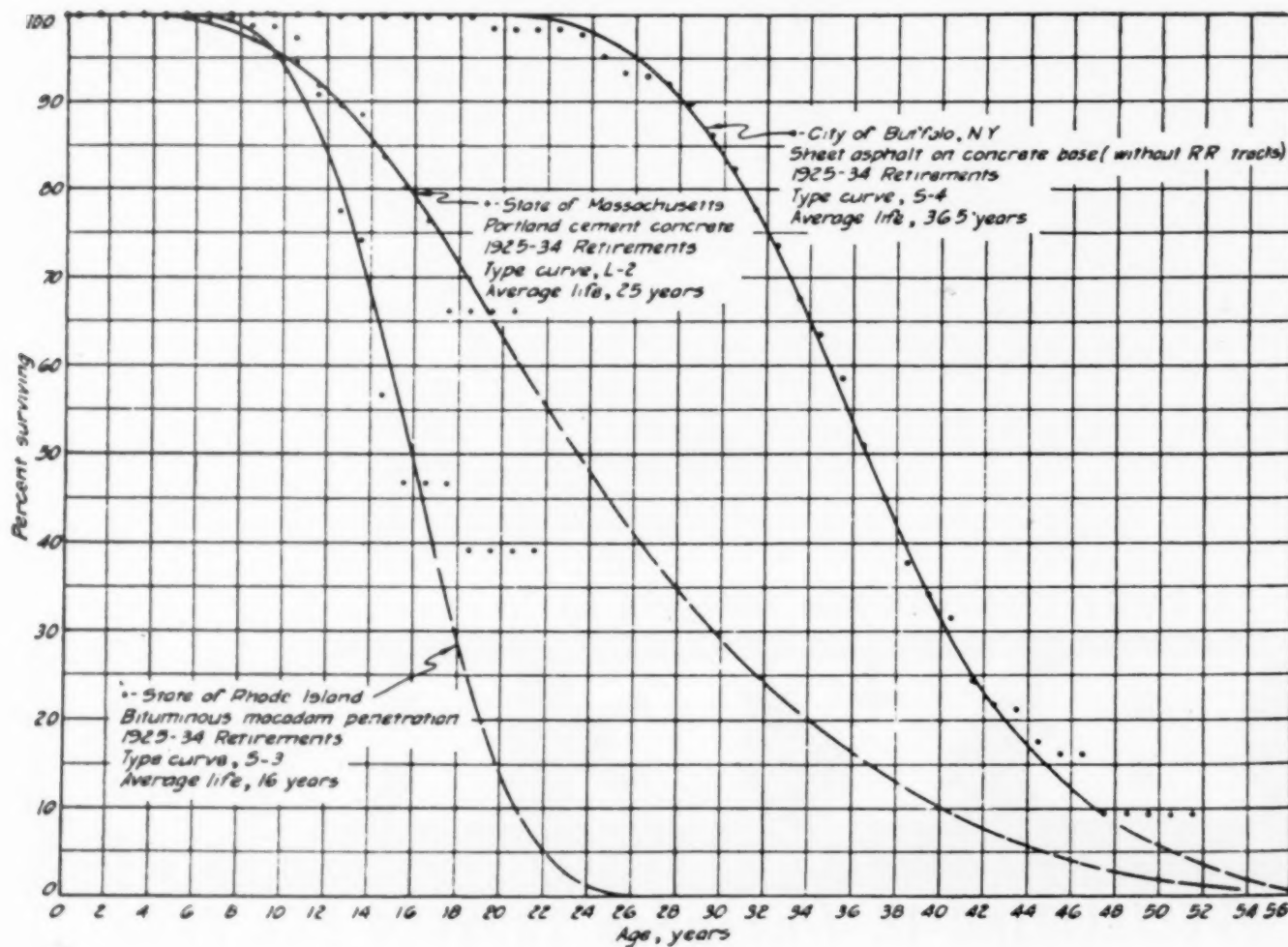
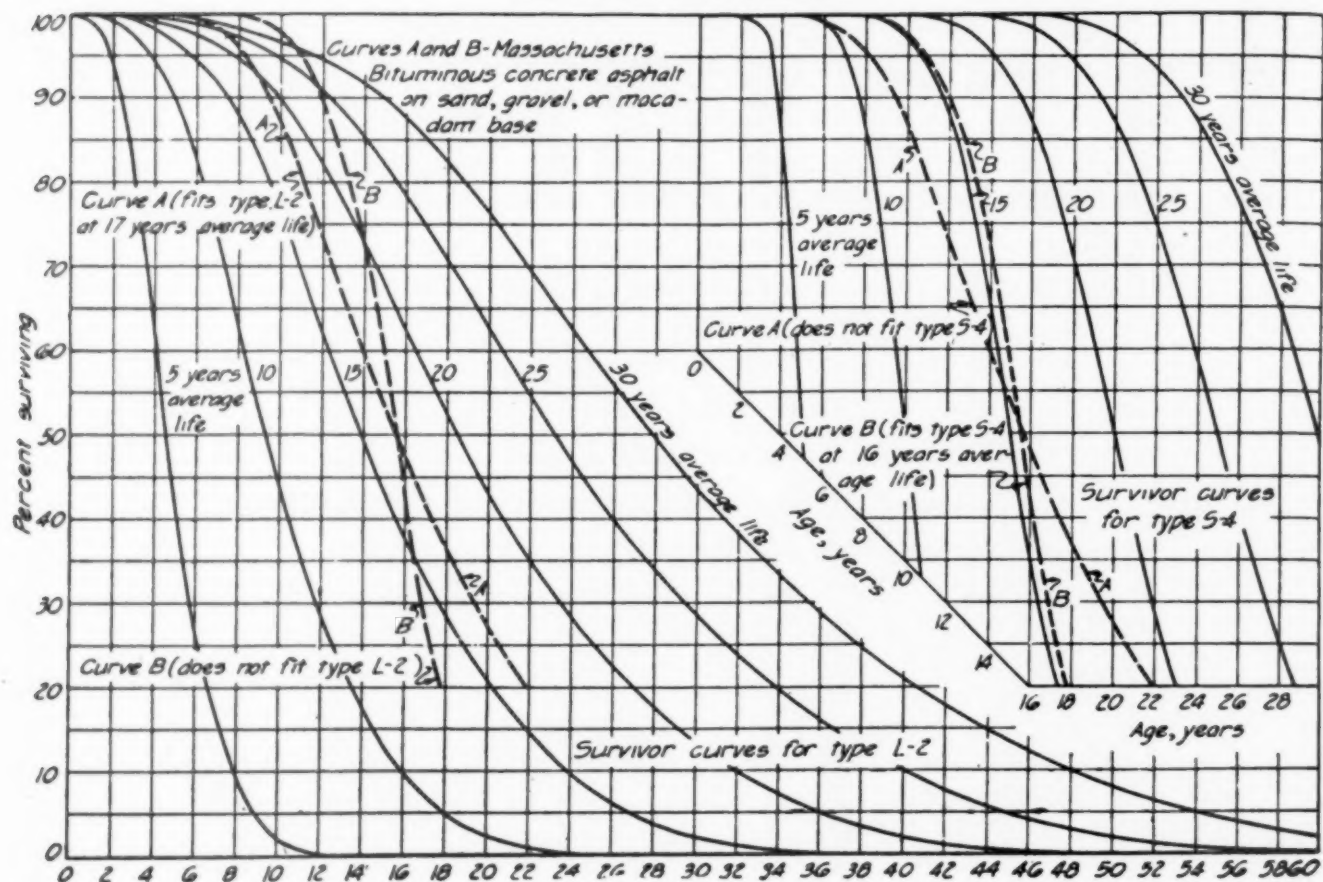


**11 Fully convertible models in  $\frac{3}{8}$ - $\frac{1}{2}$ - $\frac{5}{8}$ - $\frac{3}{4}$  yd. sizes**

# BYERS

RAVENNA, OHIO

**SPECIALIZING IN *Portable* SHOVELS AND CRANES**

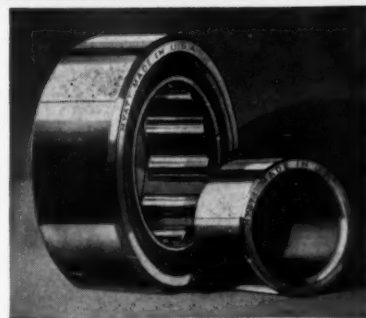


# *Always* MAKING THE GRADE



**LINK-BELT SPEEDER CORPORATION,** builders of the new Speed-O-Matic Shovel, provides every modern feature of engineering and manufacturing skill . . . including Hyatt Roller Bearings in part of their design. Another of the major shovel builders which Hyatt regularly serves.

**WITH HYATTS ON THE JOB,** mechanical equipment moves forward relentlessly . . . drives ahead . . . makes the grade. Depending on Hyatts to take the load, to conserve power, to keep them rolling, modern machines are forever free from bearing wear and care. Look to Hyatts to serve *you* best! Hyatt Bearings Division, General Motors Sales Corporation, Harrison, New Jersey; Chicago, Pittsburgh, Detroit and San Francisco.



# HYATT

R O L L E R   B E A R I N G S

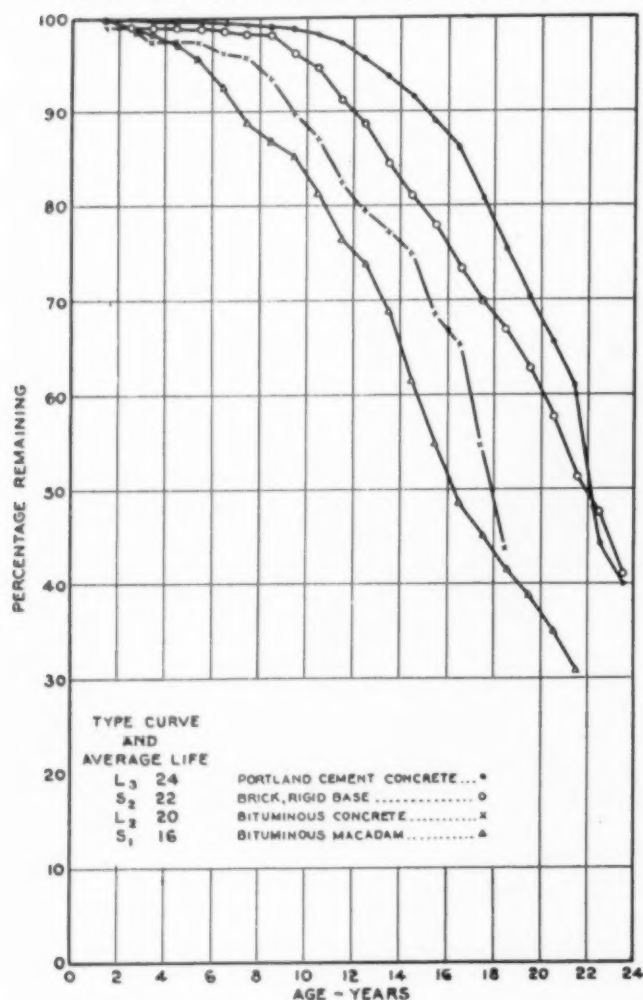
Q U I E T



### ANNUAL RATE SURVIVOR CURVES FOR FOUR ROAD SURFACE TYPES

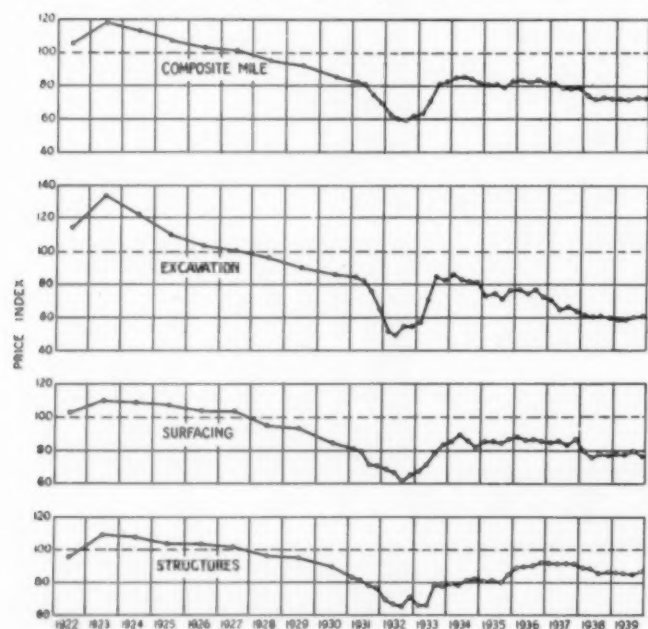
Constructed in Illinois, Michigan, Missouri, and Ohio From 1907 to 1936 as Calculated from the Retirements for the 10 Years, 1927 to 1936

Source: Proceedings 24th Annual Michigan Highway Conference



### PRICE TRENDS IN HIGHWAY CONSTRUCTION AVERAGES FOR 1925 TO 1929 TAKEN AS BASE

Source: Public Roads Administration



### WEIGHTED AVERAGE LIFE OF INTERMEDIATE SURFACING

Source: Public Aids to Motor Vehicle Transportation

| Surface Type            | Construction Years | Probable Service Life (years) |
|-------------------------|--------------------|-------------------------------|
| Gravel                  | 1906 - 15          | 15                            |
|                         | 1916 - 25          | 12                            |
|                         | 1926 - 37          | 10                            |
| Waterbound Macadam      | 1906 - 19          | 15                            |
|                         | 1920 - 37          | 12                            |
| Low-cost Bituminous Mix | 1922 - 37          | 12                            |
| Bituminous Macadam      | 1906 - 37          | 15                            |

### PERCENTAGE COST OF HIGHWAY ELEMENTS

Source: Public Aids to Motor Vehicle Transportation

| Highway Element             | Percent of Total Construction | Salvage Value (Percent) | Percent to be Amortized (2) x (100-(3)) | Service Life Years |
|-----------------------------|-------------------------------|-------------------------|---|--------------------|
| (1)                         | (2)                           | (3)                     | (4)                                     | (5)                |
| Structures                  | 16.5                          | 0                       | 16.5                                    | 50                 |
| Higher type surfacing       | 41.9                          | 40                      | 25.1                                    | 24                 |
| Intermediate type surfacing | 16.0                          | 25                      | 12.0                                    | 12                 |
| Excavation                  | 25.6                          | 0                       | 25.6                                    | 65                 |
| Total                       | 100.0                         | 20.8                    | 79.2                                    | 40.9               |

### AVG. COST PER MI. 20-FT. BITUMINOUS CONCRETE

Source: Hearings on H. R. 8838—75th Congress

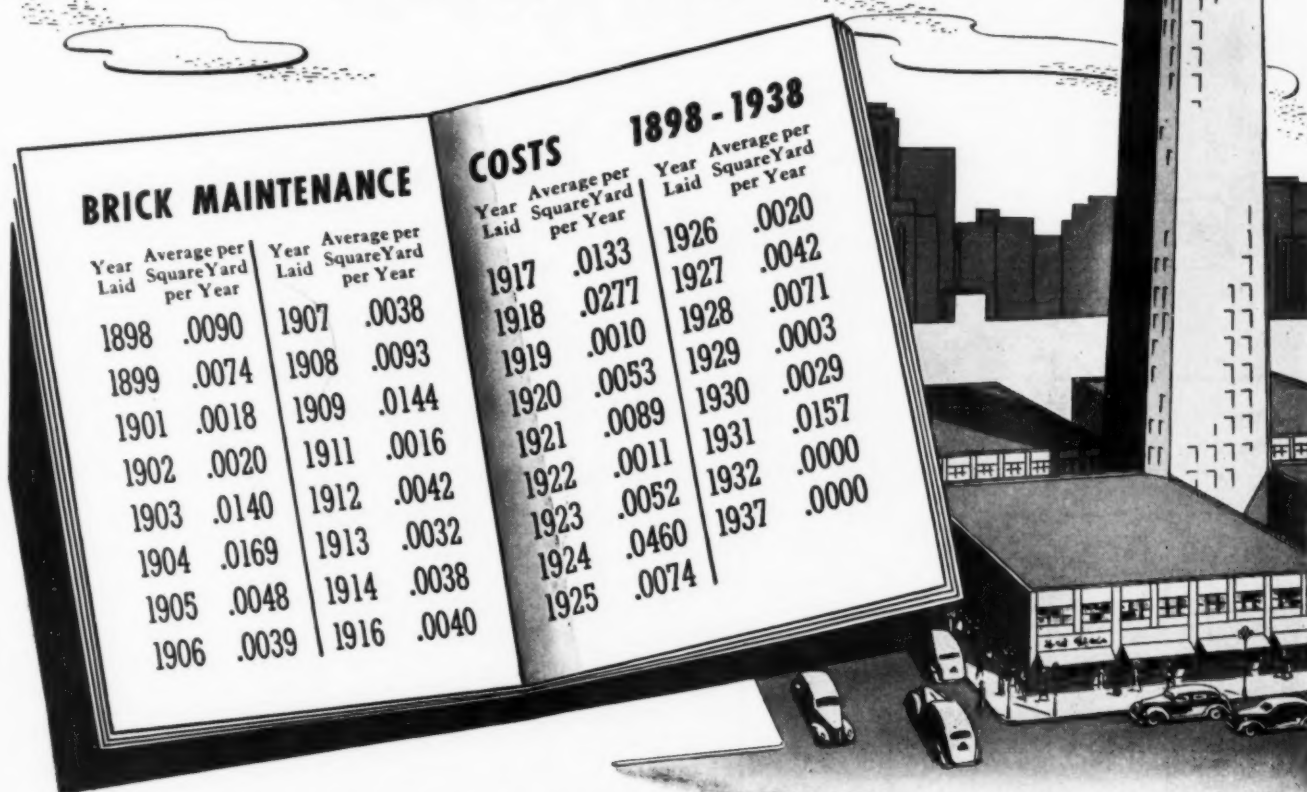
| Year            | Cost per mile, concrete base | Cost per mile, bituminous base | Cost per mile, bituminous-concrete top | Cost per mile, concrete base with bituminous-concrete top | Cost per mile, bituminous base with bituminous-concrete top |
|-----------------|------------------------------|--------------------------------|--|---|---|
| 1932            | \$14,901                     | \$10,325                       | \$9,504                                | \$24,405  | \$19,829  |
| 1933            | 18,304                       | 12,677                         | 12,085                                 | 30,389  | 22,763  |
| 1934            | 18,891                       | 10,091                         | 11,264                                 | 30,155  | 21,355  |
| 1935            | 19,477                       | 10,560                         | 9,504                                  | 28,981  | 20,064  |
| 1936            | 19,360                       | 10,208                         | 10,091                                 | 29,451  | 20,290  |
| 1937            | 19,595                       | 10,560                         | 8,213                                  | 27,808  | 18,773  |
| Average 1932-37 | 18,421                       | 10,403                         | 10,110                                 | 28,631  | 20,514  |

### MAINTENANCE EXPENSE, 1938 (LAST REPORT)

Source: American Association of State Highway Officials in Hearings on H. R. 7891

| State         | State Maintenance | State          | State Maintenance |
|---------------|-------------------|----------------|-------------------|
| Alabama       | 1,981,000         | Nevada         | 825,000           |
| Arizona       | 1,339,000         | New Hampshire  | 3,170,000         |
| Arkansas      | 3,141,000         | New Jersey     | 3,496,000         |
| California    | 11,206,000        | New Mexico     | 1,669,000         |
| Colorado      | 1,408,000         | New York       | 9,857,000         |
| Connecticut   | 3,352,000         | North Carolina | 13,724,000        |
| Delaware      | 806,000           | North Dakota   | 1,680,000         |
| Florida       | 2,895,000         | Ohio           | 13,967,000        |
| Georgia       | 1,808,000         | Oklahoma       | 2,963,000         |
| Idaho         | 1,632,000         | Oregon         | 3,424,000         |
| Illinois      | 5,451,000         | Pennsylvania   | 42,159,000        |
| Indiana       | 5,965,000         | Rhode Island   | 1,238,000         |
| Iowa          | 3,141,000         | South Carolina | 3,231,000         |
| Kansas        | 4,865,000         | South Dakota   | 1,777,000         |
| Kentucky      | 5,080,000         | Tennessee      | 2,413,000         |
| Louisiana     | 4,280,000         | Texas          | 8,805,000         |
| Maine         | 4,117,000         | Utah           | 1,522,000         |
| Maryland      | 1,368,000         | Vermont        | 1,503,000         |
| Massachusetts | 4,862,000         | Virginia       | 5,549,000         |
| Michigan      | 7,551,000         | Washington     | 3,459,000         |
| Minnesota     | 5,414,000         | West Virginia  | 6,172,000         |
| Mississippi   | 1,898,000         | Wisconsin      | 6,028,000         |
| Missouri      | 4,290,000         | Wyoming        | 852,000           |
| Montana       | 1,898,000         |                |                   |
| Nebraska      | 3,157,000         | Total          | 232,388,000       |

# Let's look at the Record in Minneapolis



**Y**OU'D expect the 784,761 square yards of brick to have a lower maintenance cost than any other type of pavement in Minneapolis. And it has—see official figures for the past 40 years.

And the Minneapolis weather is a pavement-killer! Temperatures from 100° above to plenty of -20°-30°. Months of chain traffic in ice-rutted streets... Over 40" of snow to be removed each winter—quantities of salt and cinders are used.

Yet under these severe service conditions the brick on its

busiest streets are in excellent condition after 40 years of hard service.

A brick surface has greater immunity to weather damage than any other commonly used paving material. It is denser—less absorbent. Freeze and thaw affect it less. And as for traffic wear, nothing on wheels can damage it.



South Nicollet Street, laid in 1898. In excellent condition after 42 years' continuous service.

For further information write National Paving Brick Association, National Press Building, Washington, D. C.

# BRICK

FOR NEW CONSTRUCTION OR RESURFACE WORK

## CONSUMER INCOME AND PASSENGER CAR OWNERSHIP; 1935-1936

Source: Public Roads Administration Data

| Income Level  | Number of Families                      | Percent Pass. Car Owners | Number of Family-Owned Pass. Cars | Aggregate Income \$1000 | Aggregate Income Per Family-Owned Pass. Car | Aggregate Income Per Family | Number of Persons | Number of Persons Per Family-Owned Pass. Car | No. of Persons Per Family | Aggregate Income Per Capita |
|---------------|---|--------------------------|-----------------------------------|-------------------------|---|-----------------------------|-------------------|--|---------------------------|-----------------------------|
| \$ 0 - \$ 500 | 4,178,284                               | 26.00                    | 1,086,354                         | 1,302,345               | \$1,199                                     | \$ 312                      | 16,976,700        | 15.63  | 4.06                      | \$ 77                       |
| 500 - 1,000   | 8,076,263                               | 42.25                    | 3,412,221                         | 6,122,031               | 1,794                                       | 758                         | 32,167,300        | 9.43   | 3.98                      | 190                         |
| 1,000 - 1,500 | 6,747,916                               | 60.96                    | 4,113,530                         | 8,256,194               | 2,007                                       | 1,224                       | 26,512,800        | 6.45   | 3.93                      | 311                         |
| 1,500 - 2,000 | 4,240,395                               | 70.79                    | 3,001,776                         | 7,246,373               | 2,414                                       | 1,709                       | 16,508,300        | 5.50   | 3.89                      | 439                         |
| 2,000 - 3,000 | 3,779,059                               | 77.90                    | 2,943,887                         | 9,042,378               | 3,072                                       | 2,393                       | 14,621,700        | 4.97   | 3.87                      | 618                         |
| 3,000 - 5,000 | 1,584,582                               | 84.08                    | 1,332,317                         | 5,779,695               | 4,338                                       | 3,647                       | 6,119,500         | 4.59   | 3.86                      | 944                         |
| OVER - 5,000  | 793,801                                 | 90.40                    | 717,596                           | 9,930,222               | 13,838                                      | 12,510                      | 3,059,700         | 4.26   | 3.85                      | 3,245                       |
| ALL           | 29,400,300                              | 56.49                    | 16,607,681                        | 47,679,238              | \$2,871                                     | \$ 1,622                    | 115,966,000       | 6.98   | 3.94                      | \$ 411                      |
|               | Single Persons and Institutional Groups |                          | Other Passenger Cars              |                         | Income Per Pass. Car                        |                             | Other Persons     | No. of Persons Per Pass. Car                 |                           |                             |
| ALL           | 12,058,000                              | 57.36                    | 6,916,415                         | 12,303,690              | \$1,779                                     |                             | 12,058,000        | 1.74   |                           | \$1,020                     |
| TOTAL         |   |                          | 23,524,096                        | 59,982,928              | \$2,550                                     |                             | 128,024,000       | 5.44   |                           | \$ 469                      |

## AVERAGE PASSENGER CAR EXPENSE AT VARIOUS INCOME LEVELS

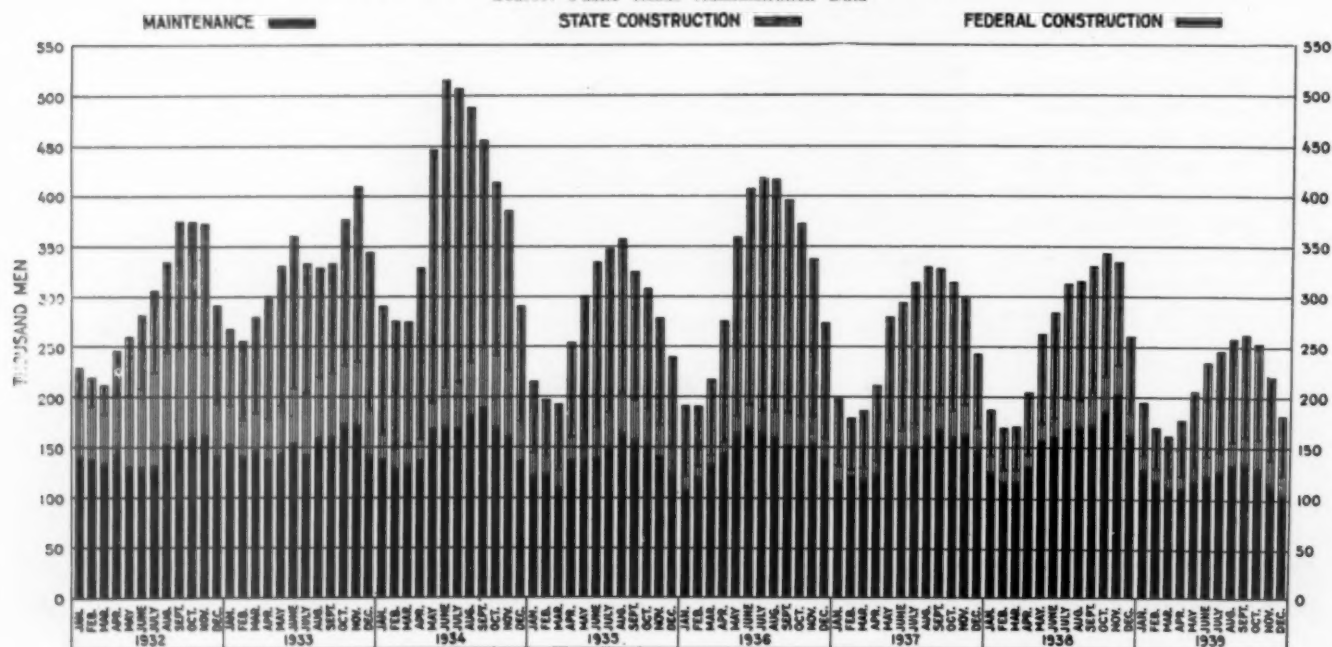
Source: Bureau of Home Economics, U. S. Dept. of Agriculture, 1935-1936

| Income Level | No Families | Percentage Families Owning Cars | Aver. Miles Driven for Family Use | Average Expenditures - All Families |      |     |                 |                 |      |   | Percentage Family use Excl. of Bus. Use. |
|--------------|-------------|---------------------------------|-----------------------------------|-------------------------------------|------|-----|-----------------|-----------------|------|---|--|
|              |             |                                 |                                   | All Items                           | Gas. | Oil | Tires And Tubes | Rprs. And Serv. | Ins. | Garage Rent Licenses Fines, Tolls, Etc. |  |
| 250- 499     | 61          | 41.0                            | 2,024                             | 16                                  | 8    | 1   | 1               | 1               | 1    | 4                                       | 95.5                                     |
| 500- 749     | 229         | 44.1                            | 2,765                             | 24                                  | 14   | 2   | 2               | 1               | 1    | 4                                       | 82.8                                     |
| 750- 999     | 408         | 50.0                            | 3,218                             | 31                                  | 16   | 2   | 3               | 2               | 2    | 6                                       | 88.6                                     |
| 1000-1249    | 467         | 61.9                            | 4,500                             | 48                                  | 27   | 4   | 4               | 3               | 3    | 7                                       | 80.9                                     |
| 1250-1499    | 425         | 69.4                            | 4,834                             | 66                                  | 36   | 5   | 6               | 5               | 6    | 8                                       | 82.9                                     |
| 1500-1749    | 343         | 80.2                            | 5,737                             | 90                                  | 50   | 7   | 7               | 7               | 8    | 11                                      | 83.6                                     |
| 1750-1999    | 282         | 75.9                            | 5,747                             | 86                                  | 48   | 6   | 6               | 5               | 10   | 11                                      | 86.4                                     |
| 2000-2249    | 215         | 81.9                            | 6,877                             | 111                                 | 62   | 9   | 7               | 8               | 12   | 13                                      | 81.6                                     |
| 2250-2499    | 163         | 83.4                            | 6,969                             | 110                                 | 59   | 9   | 8               | 8               | 13   | 13                                      | 81.2                                     |
| 2500-2999    | 198         | 88.4                            | 7,168                             | 135                                 | 71   | 10  | 8               | 12              | 17   | 17                                      | 83.0                                     |
| 3000-3999    | 201         | 90.0                            | 9,162                             | 156                                 | 88   | 12  | 12              | 13              | 16   | 15                                      | 88.9                                     |
| 4000-4999    | 64          | 89.1                            | 10,482                            | 177                                 | 100  | 14  | 10              | 17              | 20   | 16                                      | 93.1                                     |
| 5000-5999    | 62          | 98.4                            | 10,680                            | 221                                 | 116  | 16  | 15              | 21              | 30   | 23                                      | 88.1                                     |

Note: Lincoln, Ill.; Boone, Ia.; Columbia and Moberly; Mt. Vernon and New Philadelphia, O.; Beaver Dam, Wis.

## TOTAL FEDERAL AND STATE HIGHWAY EMPLOYMENT FOR THE UNITED STATES

Source: Public Roads Administration Data





# 22 R.B. FINEGRADERS

*Keep  
The  
Turnpike*

*On The Pay Line!*

Top Left: One of the four 12 foot R.B. Finegraders that Union Construction Company has kept moving on the Turnpike!

Top Right: Shullo's R.B. Finegrader equipped with rubber tired wheels for riding on the Turnpike slab!

Center: A grade that leaves nothing to be desired on Wm. Vogle's Turnpike job with a 24 foot R.B. Finegrader.

**U**P AND down the length of Pennsylvania's famous Turnpike you'll see 22 R. B. Finegraders on 19 different jobs hewing the grade right to specifications—building a finegrade that's clean and true and well compacted despite the rocky soil conditions! And they're moving fast—John F. Bloomer's 24 foot R. B. has cut 2100 feet of grade in 20 hours—others are setting the pace an easy 1000 feet out ahead of the pavers!

If anything ever proved the advantages and superiority of R. B. Power Finegrading, it's the Turnpike, where every ounce of pressure is being exerted to button down jobs and make up time lost by days and days of downpour—where many of the nation's leading paving contractors have depended on R. B. Finegraders to keep the job moving, to keep costs down, to reduce loss of yield and build a finegrade that's "right on the payline."

Take a tip from the Turnpike. Plan now to put an R. B. Finegrader on your next job. Write for descriptive literature today! **BUCKEYE TRACTION DITCHER COMPANY**, Findlay, Ohio.

**BUILT  
BY**

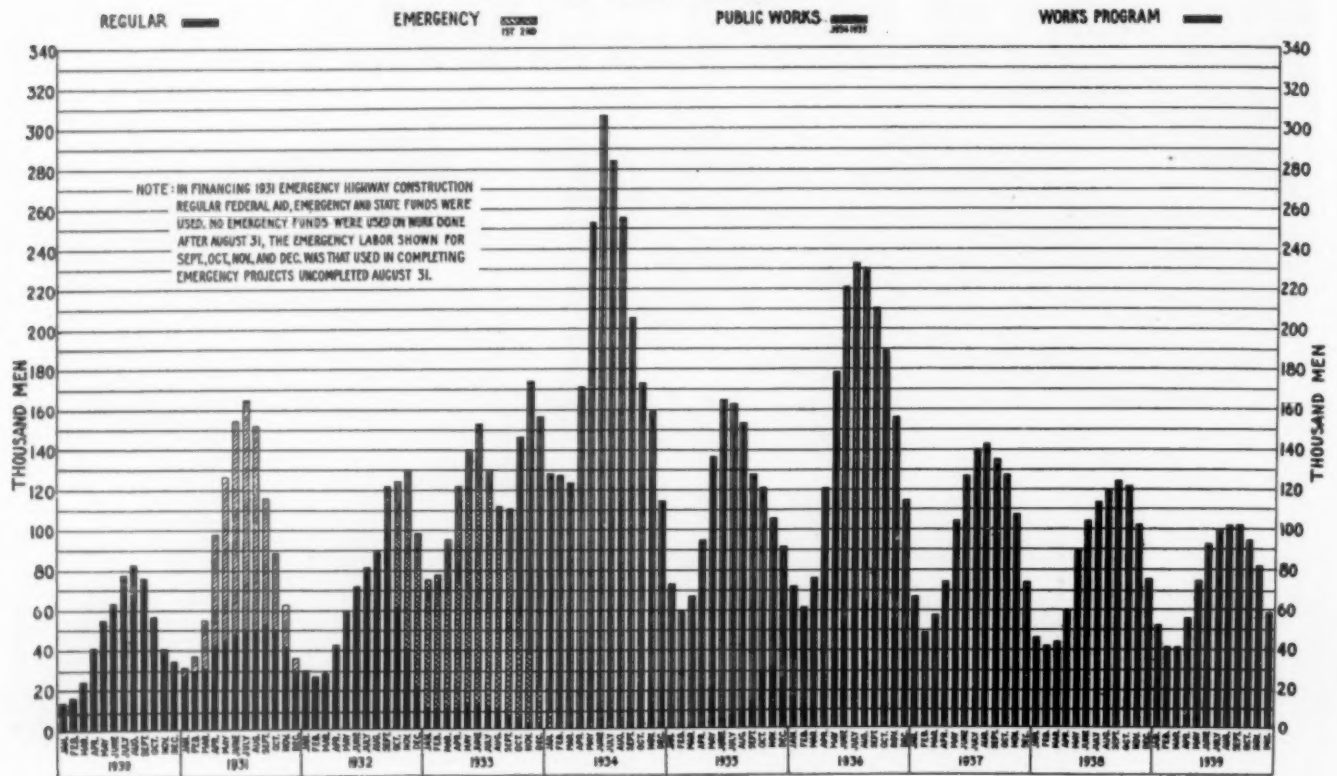
**Buckeye** ✓



Convertible Shovels . Trenchers . . . . . Tractor Equipment . . R. B. Finegrader . . Road Wideners . . . Spreaders . . . . .

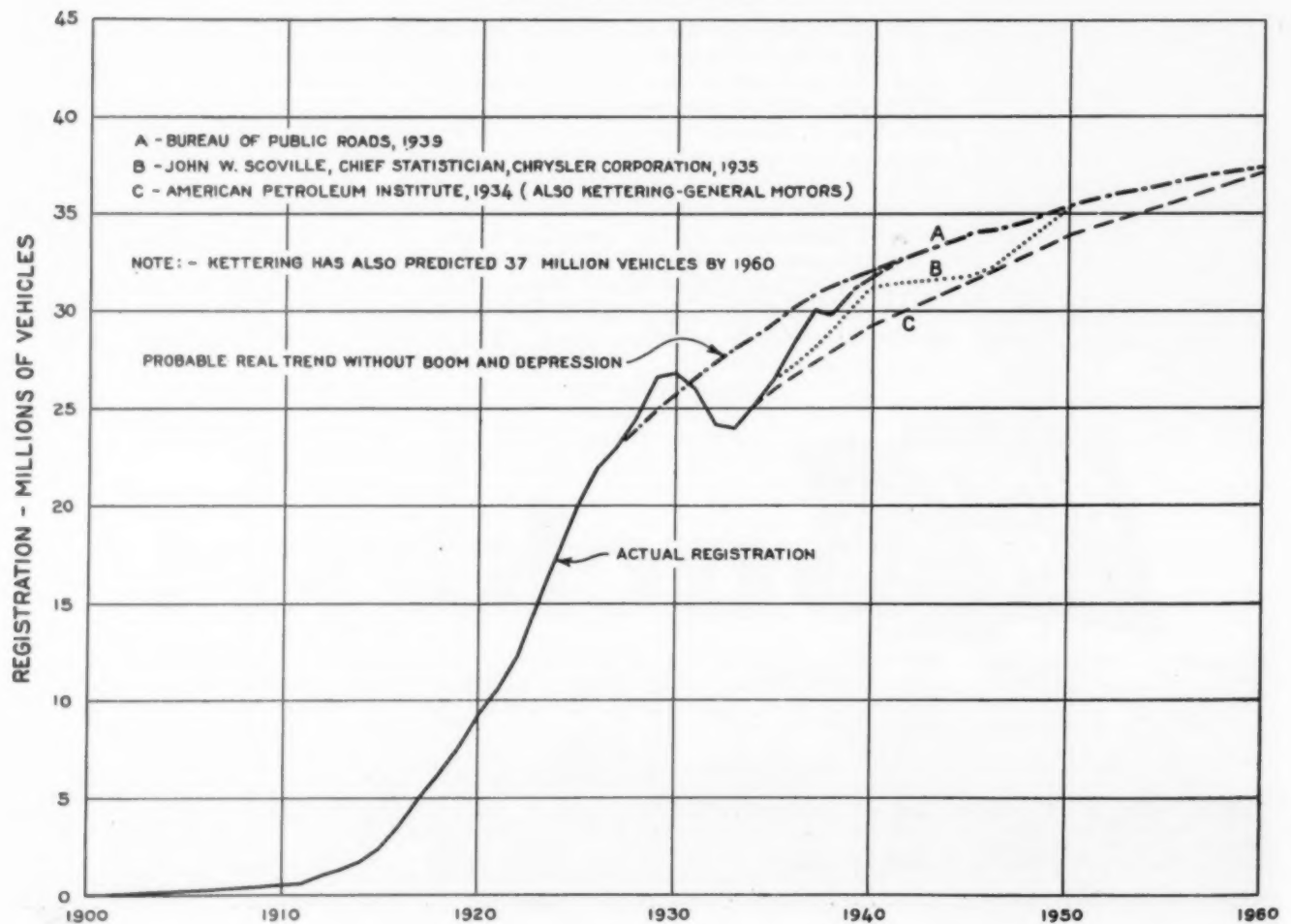
## TOTAL FEDERAL HIGHWAY EMPLOYMENT FOR THE UNITED STATES

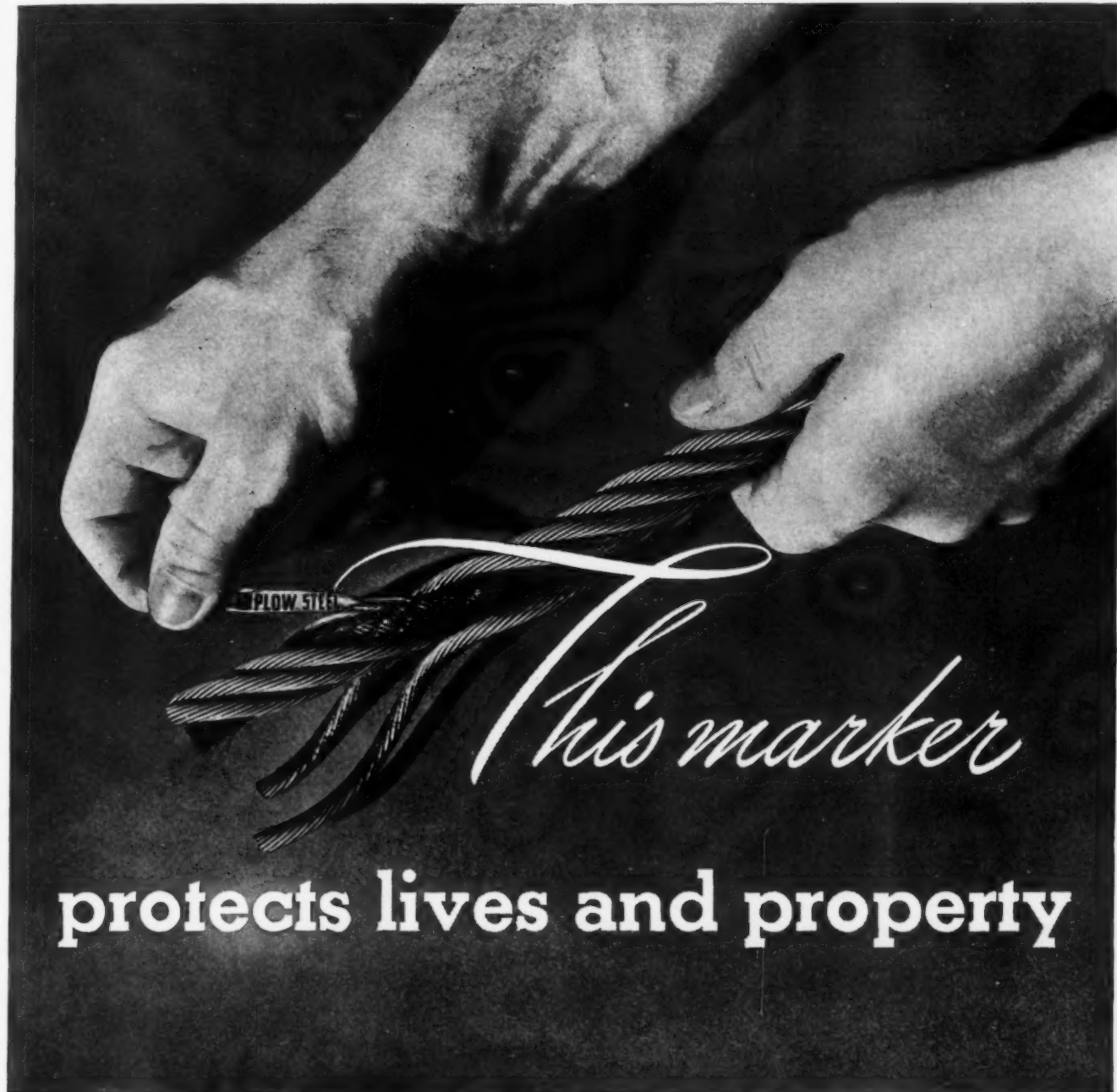
Source: Public Roads Administration Data



## COMPARISON OF MOTOR VEHICLE REGISTRATION FORECASTS

Source: Public Roads Administration





*This marker*  
**protects lives and property**

An exclusive identification tape is built into every foot of Bethlehem Wire Rope. This tape—known as Telfax—is clearly marked with the grade of steel in the rope. As a double check, each tape bears a distinctive color—purple—Purple Strand; green—Plow Steel; red—Cast Steel, and so on.

Telfax tape is a positive protection for

workmen and property. It eliminates the possibility of using the wrong grade of rope on a dangerous or critical job.

Telfax tape is laid next to the core. Regardless of whether the rope has been respooled or comes to you in cut lengths, with all markings lost, you can check it quickly and easily with the Telfax identification tape.

**BETHLEHEM STEEL COMPANY**





### FUTURE POPULATION OF THE UNITED STATES ACCORDING TO CERTAIN ASSUMED TRENDS OF NET IMMIGRATION

Source: Thompson and Whelpton

| Year                         | A<br>"Low" birth rates and expectation of life, no immigration | B<br>Same as A except fewer births | C<br>Same as A except "medium" expectation of life | D<br>Same as C except some immigration | E<br>Same as D except more immigration | F<br>Same as D except more births | G<br>Same as D except "high" expectation of life | H<br>"Medium" birth rates, expectation of life, and immigration | I<br>Same as J except less immigration | J<br>"High" birth rates, expectation of life and immigration |
|------------------------------|--|------------------------------------|--|--|--|-----------------------------------|--|---|--|--|
| FUTURE POPULATION (MILLIONS) |  |                                    |  |  |  |                                   |  |   |  |  |
| 1930.....                    | 122.8  | 122.8                              | 122.8  | 122.8                                  | 122.8                                  | 122.8                             | 122.8  | 122.8   | 122.8                                  | 122.8  |
| 1935.....                    | 127.8  | 127.3                              | 127.8  | 127.8                                  | 127.8                                  | 127.8                             | 127.8  | 128.0   | 128.4                                  | 128.4  |
| 1940.....                    | 131.9  | 130.9                              | 132.2  | 132.5                                  | 133.0                                  | 132.9                             | 132.5  | 133.1   | 134.5                                  | 135.1  |
| 1945.....                    | 135.0  | 133.7                              | 135.9  | 136.8                                  | 138.0                                  | 137.7                             | 137.1  | 138.3   | 141.5                                  | 142.8  |
| 1950.....                    | 137.1  | 135.6                              | 138.8  | 140.4                                  | 142.3                                  | 141.8                             | 141.1  | 142.9   | 148.7                                  | 150.8  |
| 1955.....                    | 138.0  | 136.4                              | 140.9  | 143.2                                  | 145.8                                  | 145.0                             | 144.6  | 146.8   | 156.0                                  | 159.0  |
| 1960.....                    | 137.9  | 136.0                              | 141.9  | 145.0                                  | 148.4                                  | 147.4                             | 147.7  | 149.8   | 163.3                                  | 167.3  |

#### 5,514,000 MOTOR VEHICLES ON FARMS, 1938

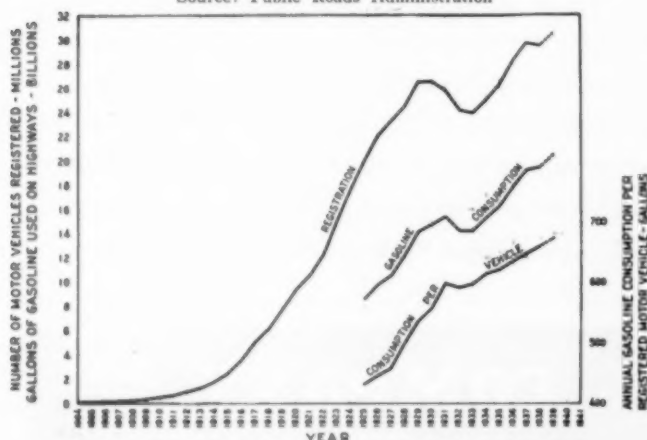
Figures From "Successful Farming"  
Source: Automobile Facts and Figures, 1939

| States     | Total   | Passenger Cars | Trucks  | States     | Total     | Passenger Cars | Trucks  |
|------------|---------|----------------|---------|------------|-----------|----------------|---------|
| Ala.....   | 87,567  | 74,563         | 13,004  | Neb.....   | 161,146   | 136,039        | 25,107  |
| Ariz.....  | 18,625  | 14,231         | 4,394   | Nev.....   | 4,698     | 3,297          | 1,401   |
| Ark.....   | 75,930  | 64,978         | 10,952  | N.H.....   | 19,397    | 13,760         | 5,637   |
| Calif..... | 320,853 | 109,968        | 210,885 | N.J.....   | 44,768    | 26,977         | 17,791  |
| Colo.....  | 70,983  | 53,621         | 17,362  | N.M.....   | 37,060    | 27,978         | 9,082   |
| Conn.....  | 39,336  | 26,526         | 12,810  | N.Y.....   | 332,473   | 164,219        | 168,254 |
| Del.....   | 12,924  | 9,621          | 3,303   | N.C.....   | 146,551   | 128,599        | 17,952  |
| D.C.....   | 163     | 60             | 103     | N.D.....   | 86,738    | 71,351         | 15,387  |
| Fla.....   | 51,272  | 38,080         | 13,192  | Ohio.....  | 248,970   | 208,413        | 40,557  |
| Ga.....    | 114,522 | 97,012         | 17,510  | Okla.....  | 143,591   | 120,889        | 22,702  |
| Idaho..... | 46,862  | 39,547         | 7,315   | Ore.....   | 84,173    | 69,830         | 14,343  |
| Ill.....   | 252,440 | 208,743        | 43,697  | Pa.....    | 249,937   | 190,902        | 59,035  |
| Ind.....   | 180,640 | 158,786        | 21,854  | R.I.....   | 8,661     | 5,210          | 3,451   |
| Iowa.....  | 222,626 | 229,637        | 22,989  | S.C.....   | 84,888    | 76,280         | 8,608   |
| Kan.....   | 198,035 | 168,470        | 29,565  | S.D.....   | 60,907    | 68,512         | 12,395  |
| Ky.....    | 117,847 | 108,832        | 9,015   | Tenn.....  | 99,489    | 90,316         | 9,173   |
| La.....    | 62,823  | 51,444         | 11,379  | Texas..... | 368,181   | 313,285        | 54,896  |
| Maine..... | 39,390  | 27,916         | 11,474  | Utah.....  | 32,309    | 26,090         | 6,219   |
| Me.....    | 61,450  | 47,372         | 14,078  | Vt.....    | 26,017    | 20,478         | 5,539   |
| Mass.....  | 35,192  | 22,811         | 12,381  | Va.....    | 126,411   | 103,619        | 22,792  |
| Mich.....  | 218,369 | 175,891        | 42,478  | Wash.....  | 92,994    | 69,587         | 23,407  |
| Minn.....  | 252,865 | 211,269        | 41,596  | W.Va.....  | 51,396    | 42,797         | 8,598   |
| Miss.....  | 93,578  | 78,406         | 15,172  | Wis.....   | 268,445   | 211,078        | 57,367  |
| Mo.....    | 212,520 | 190,758        | 21,762  | Wyo.....   | 22,533    | 17,096         | 5,437   |
| Mont.....  | 65,961  | 47,696         | 18,265  | Total..... | 5,513,438 | 4,516,598      | 997,127 |

Note: Source and Method of Estimating—Farm Passenger Cars and Trucks Combined: Total 1938 Passenger Car and Truck Registrations, Farm and Non-Farm, ("Automotive Industries," Feb. 25, 1939) Multiplied By Per Cent of Total On Farms, 1935 ("Motor Fuels From Farm Products," U. S. D. A. Misc. Publication No. 327, Dec. 1938). Farm Passenger Cars and Trucks Separately: Distributed Combined Farm Passenger Cars and Trucks by Proportion Reported in 1930 Census, Except Iowa in Which the Proportion is Based on Assessors' Distribution as of Jan. 1, 1939 and Wisconsin, Jan. 1, 1938.

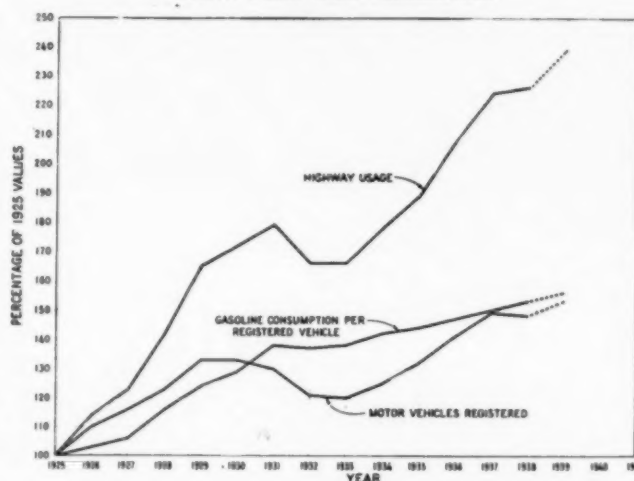
#### TREND IN MOTOR VEHICLE REGISTRATION AND GASOLINE CONSUMPTION

Source: Public Roads Administration



#### TREND IN GASOLINE CONSUMPTION AND HIGHWAY USAGE

Source: Public Roads Administration



#### AVERAGE ANNUAL MAINTENANCE COST PER MILE RURAL STATE HIGHWAY SYSTEM, BY TYPE OF SURFACE

Source: California State-Wide Highway Planning Survey Facts

| Type of surface                              | Travelled way | Improved shoulders | Roadside | Other charges | Total |
|--|---------------|--------------------|----------|---------------|-------|
| Paved.....                                   | \$157         | \$84               | \$216    | \$128         | \$585 |
| Intermediate.....                            | 309           | 10                 | 233      | 112           | 664   |
| Unsurfaced.....                              | 305           | 1                  | 117      | 104           | 527   |
| Average of all types exclusive of bridges... | 264           | 29                 | 197      | 115           | 605   |
| Bridges.....                                 | 214           | 30                 | 6,526    |               | 6,770 |
| Average of all types including bridges.....  | 264           | 29                 | 197      | 138           | 628   |

**Right of Way and Construction Costs for 9 Metropolitan Projects**—Right of way costs for 9 typical metropolitan highway projects in Michigan were nearly 5 times the construction cost. The 9 projects covered 27,656 miles of highway, the total construction cost being \$6,433,327, and the total right of way cost \$31,586,296. This gives an average construction cost of \$232,619 per mile, and average right of way cost of \$1,142,114 per mile.

**W**HETHER IT'S WIDENING, PATCHING, OR NEW CONSTRUCTION,  
**BUFFALO-SPRINGFIELD HAS A ROLLER TO FIT THE JOB**

**THE BUFFALO-SPRINGFIELD ROLLER COMPANY**  
 SPRINGFIELD, OHIO



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*New York's Popular*

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 SAME MANAGEMENT

IN THE CENTER OF MID-TOWN NEW YORK

**"G.J. DIXON" AIR HAMMER COUPLING**

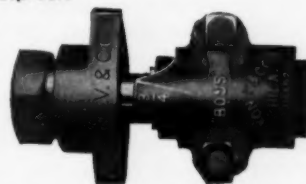


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**NO WASHER**

GROUND JOINT construction insures safe, trouble-free service with minimum maintenance expense. No leaking or lost washers to replace. Copper insert in spud fits rounded head of steel stem forming soft-to-hard metal seal that **WILL NOT LEAK**. Compact type, Style XLD-41,  $\frac{1}{2}$ " and  $\frac{3}{4}$ "; heavy type, Style XHD-52,  $\frac{3}{4}$ " and 1". Cadmium plated—rustproof.

**"GJ-BOSS" AIR HAMMER COUPLING**



Same as above, except equipped to withstand extreme pressures and roughest handling by application of strong malleable iron "BOSS" Interlocking Clamp. No possibility of blow-offs. Compact type, Style XLD-41,  $\frac{1}{2}$ " and  $\frac{3}{4}$ "; heavy type, Style XHD-52, and 1".

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# EDITORIAL

## TRIBUTE TO A JOB WELL DONE

**C**OMPLETE, to all practical intents and purposes, the Pennsylvania Turnpike stands as a physical accomplishment of engineering diligence and contracting energy. Men and women have lived, loved, and died in the energetic prosecution of this largest of all single highway projects. Working under pressure, against a very short time limit, they transformed an improbable possibility into a desirable actuality.

Based upon the sole foundation of the contract system, accomplishment of this project guaranteed to the public a highway facility at the minimum cost consistent with the plans and specifications. Once again, the contract method of procedure has demonstrated its efficiency and effectiveness in producing a milestone of engineering construction.

Overcoming labor employment obstacles, avoiding right-of-way barriers, eliminating frictional interferences, planning against causes of delays and combating physical weaknesses, the engineers and contractors forced to successful termination a project for which they deserve our commendation. Commendation not so much for the project as for the fortitude, ingenuity, energy, and acumen of all those who had a part in the effort. Fired by enthusiasm, the combined impact of the hard driving organizations broke all records for speed of accomplishment. Justly, they are proud of their work.

Without the contract method, the project could not have been done. The procedure of competitive bidding—the foundation stone of the contract system—assured the most economical job. There is no expert opinion in this country which costs so little to obtain as the expert opinion of the guaranteed bids of competing contractors who are willing to back up their opinions of costs with their own money. The contract is awarded to the lowest responsible bidder, all bidding upon a uniform basis, and the public gets the benefit of competition in the form of a most economical job. Then, within a short time, and prior to starting work, the successful bidder is required to furnish a bond that he will perform the work in accordance with the plans and specifications for a definite cost and within a definite time. The public takes no chances whatever. Their engineers draw the plans for what they want, they write the specifications for how they want it, for the price they are willing to pay, for when they want it—and get it.

That is the story of the Pennsylvania Turnpike. It is the corner stone of the construction success of the enterprise.

We tender our humble congratulations to the contractors and their organizations and the Turnpike Commission and its engineers.

## BAROMETRIC POLITICIANS

**I**T IS the common experience of state highway departments to have legislatures load more and more miles of roads from county systems onto their mileage of state highways. Of course, pressure groups, as local good roads committees, local chambers of commerce, and local political organizations put the squeeze on legislators, and since they are barometrically responsive to political winds they succumb to the pressure. Having accom-

plished the addition the local groups then begin to work on the highway commissions, the district and state highway engineers. Delegations are the common, almost daily, experience of state highway commissions. The pressure groups start agitation for improvement of this road or that one.

By the time the next legislative session rolls around county groups are again hammering at the legislatures for a division of the gas tax and vehicle license fee revenues. Often they are successful—again due to the barometric politicians. The result is that state construction revenues are reduced exactly by the amount of the latest division. In some cases this division is really diversion.

It seems only right and fair that when funds are taken away from the construction budgets of the states, parts of their road systems should also be returned to the counties. In many of our states, where county roads have been transferred to the states, there are large mileages on which no money whatever can be spent. The states, generally, have not sufficient funds to keep up with obsolescence, without taking on new mileage. Why not promote individual state-wide organizations to assist state highway commissions in preserving state funds and to guard against undesirable overloadings of additional mileage? Maybe a public relations department of the highway commission employing state-wide highway planning survey data can accomplish the desired results.

## PROPOSED METHOD OF PROGRAMMING HIGHWAY INCOME

**P**RESSURE groups, home industry, and politics often play as important a role in fund allocation and selection of improvement for highway construction as does traffic concentration. Regardless of how sound the basis upon which fund allocation or improvement selection is determined, we will still be hampered by these natural social influences. Fund allocation and improvement selection can be based upon traffic requirements, present and anticipated future, to the end that a highway system will gradually develop, which will represent the most economical expenditure for an economical standard.

The theory of fund allocation and improvement selection given herein is being studied. The subject is controversial and for that reason is presented here for review and discussion. If sound, it will have an important effect on highway policy. Statistical data developed in the study of the theory will not be published until an adequate determination is made of the correctness of the theory.

In general, this concept of fund allocation according to highway cost requirements in relation to traffic volume would tend to emphasize the importance of future concentration of traffic. Thus, if the total indicated future highway income were fixed at, say, 0.5 cent per vehicle mile, the greater the concentration of traffic, the greater would be the mileage of road earning more than its cost, i.e., the greater would be the mileage costing less than 0.5 cent per vehicle mile. Consequently, the greater this concentrated mileage, costing less than 0.5 cent per vehicle mile, the greater would be the amount left over for subsidizing those mileages earning less than 0.5 cent per vehicle mile. Thus, local highway development will be



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**TRUKMIXERS** because they mix  
concrete faster  
and we get more  
trips per day"



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| Dixie Culvert Mfg. Co. . . . .              | Little Rock, Ark. |
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best served by the adequate protection of, and concentration of traffic on the "earner" group of more important highways.

This theory creates the problem of circumscribing the entire field of highway operations, for example in a given state, and subsequently considering each of the elements, only in proper perspective—that is, in relation to the whole problem. Step by step, the development of the procedure would be about as follows:

1. Analysis of past motor vehicle use and the forecasting of probable future use. Statistical data for mak-

ing these studies would be

- (a) Registration
- (b) Motor fuel consumption
- (c) Vehicle mileage
- (d) All inter-relationships of population and state realized income.

2. The analysis of past highway expenditures and receipts and highway revenue sources and the forecasting of future net highway receipts available in relation to future motor vehicle use.

3. The analysis of past highway cost requirements by systems (that is, urban, state highway urban exten-

sions, rural state highway, and local roads) in traffic volume groups on each system.

4. The empirical determination of highway cost requirements in traffic volume groups and traffic growth trends in traffic volume groups. The mileage of sections composing the several volume groups should be sufficiently large to yield stable trends in group averages.

5. The determination of future cost requirements in these traffic volume groups by the application of costs per mile per year to the mileage of each group appropriate to the average traffic volume of that group at any future period.

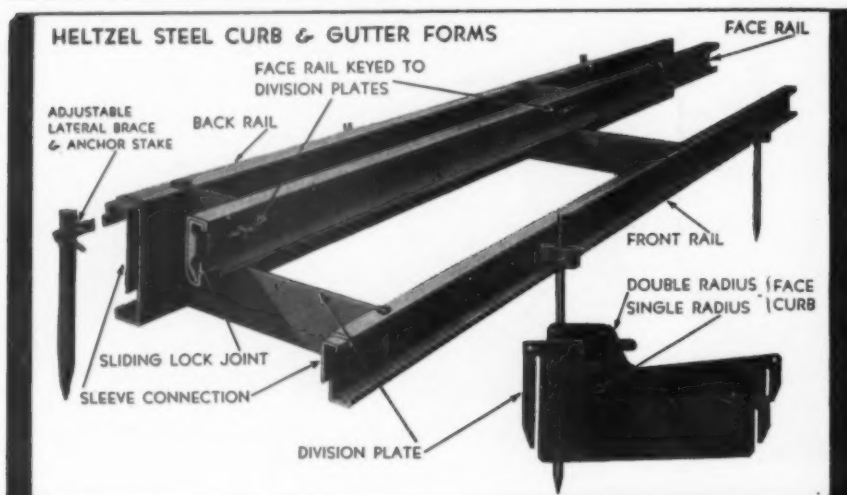
6. The identical cost requirements for any traffic volume group of sections of highways would be applied to the mileage of that group irrespective of the system upon which that mileage exists.

7. Thus, working from maximum to minimum traffic volume groups, the cost requirements would be computed for all systems until the total indicated motor-user imposts have been exhausted. The result would be the allocation of future available highway receipts to systems, and within systems to volume groups of section mileages of varying degrees of functional importance.

8. The next step would be the programming of the amounts indicated for each volume group on each system, based on the relative deficiency of the sections referred to the average standard existing in the total group. Priorities would thus be based on a real condition existing in the group in relation to the average traffic carried.

Annually, amounts so expended would elevate the average base condition and new relative deficiencies would be indicated for early priority in relation to the new average. Gradually, the mileages composing each traffic volume group would develop homogeneity and ultimate standard in relation to traffic importance. This being true of the several volume groups would be equally true of the several systems.

Such a procedure of the orderly, logical programming of highway funds upon a statistical basis would tend to offer an effective barrier against pressure groups and political manipulation of highway-user imposts. While it may be argued that this procedure contains controversial elements, it is the writer's belief that they are minor in nature and the procedure is justifiable. It places programming upon a purely economic basis, leaving the elements of "benefits" as reserve for supporting allocation judgments.



**The New Heltzel Heavy-Duty Steel Forms for constructing combined curb-and-gutters. Face forms are removed without disturbing the front and back forms or the division plates — greatly facilitating the hand finishing operations on the face curb. Quick easy adjustments for setting to line and grade. Write today for complete information or quotations and catalog S-20.**

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FINISHING TOOLS FOR CONCRETE ROADS

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TRUCK MOBILITY really counted here — where 500 miles of pipelines were traversed and sections uncovered to reinforce and repair structures.\* Two MICHIGAN TRUCK TRENCH HOES did the excavating and backfilling, saving time and money every step of the way—sometimes moving a few feet between operations—sometimes many miles. No expensive delays for loading or transporting these MICHIGANS! Ready to work at once—and ready to move on again at truck speed . . . Trenching 8 to 18 feet deep, these machines removed 50 to 150 yards of earth at each location, with the same efficiency that has marked MICHIGAN as the outstanding value where modern conditions require modern methods of solution.

\* Natural Gas Pipeline Company of America

3/8YD  
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## NEW EQUIPMENT AND MATERIALS

### New Spreader and Finishing Machine

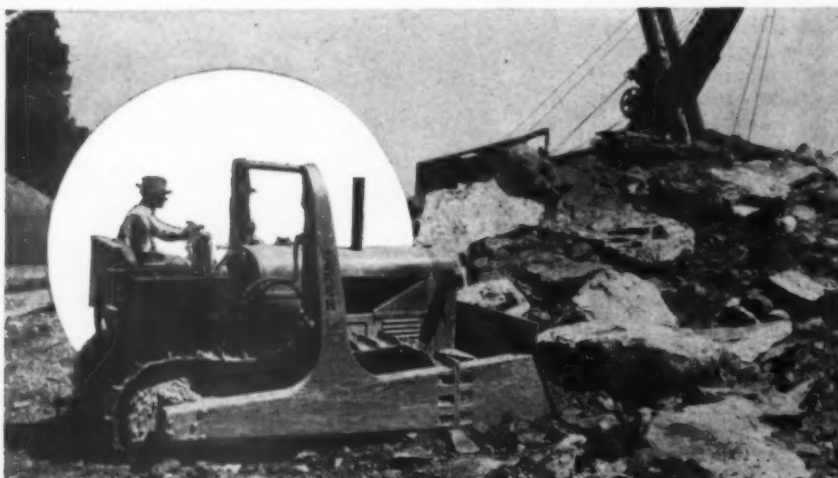
A new power driven model of the D-K spreader and finishing machine, was recently announced by the Shunk Manufacturing Co., Bucyrus, O. One of the advantages claimed for the new machine is its ability to lay a smoothly finished mat of surfacing material over badly worn and rutted roads and streets without need of any preliminary scarifying of the old surface or any filling of holes. Since the machine rides over the new surface on two crawler type wheels equipped with smooth belt treads, with these wheels located immediately behind the oscillating finishing screed,

the bumps in the old road surface are stated to have little or no effect on the finished surface. Another feature of the design of the machine is the adjustment for height of the two front wheels. Either wheel may be set to run at a level above or below the opposite wheel to compensate for differences in the subgrade or old surface. Extra wheels are supplied for use in transporting the machine from one job to another. Power for the machine is supplied by a 4-cylinder, water-cooled industrial type motor. Drive is through a truck type transmission and separate reverse, which provides five speeds both forward and reverse. Two of the three



*New Power Driven Model D-K Spreader and Finisher*

wheels in each crawler unit are driven through a truck type differential.



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Owners of Baker Hydraulic Bulldozers and Gradebuilders are equipped to handle the toughest jobs. Bakers never fail to live up to their reputation for sturdiness, accurate performance and easy control.

With the two types of Baker Bulldozers — with straight and curved blades — you can do a wider variety of work. Bulldozer moldboards are interchangeable with each other as well as with Gradebuilder moldboards.

Remember Baker builds only twin-cylinder, direct-lift Bulldozers with down pressure and balanced hydraulic system — the kind with simple, secure mounting that is easy on your tractor.

### HYDRAULIC *Scrapers*

The exclusive "flat digging angle" feature of Baker Two-Wheel Scrapers makes them easier to load, with less power. They cut smoother, more even grades and reduce earth moving costs by increased yardage. Built in 3, 4 and 6 cubic yard capacities for tractors of 25 to 60 H.P.—all with automatic rear clearance.



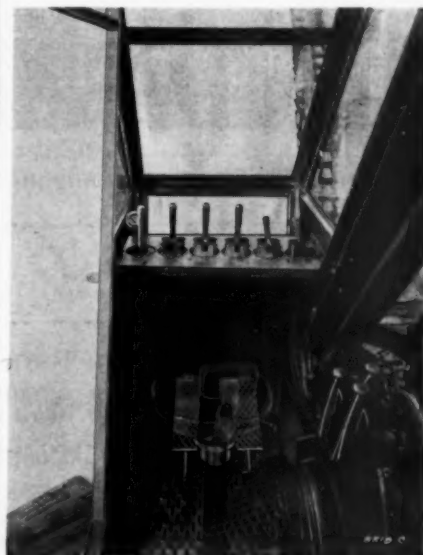
*Ask for Bulletins of Bulldozers, Scrapers  
or any item of Baker Tractor Equipment.*

**THE BAKER MFG. CO., 506 Stanford Ave., Springfield, Ill.**

**• BAKER TRACTOR EQUIPMENT •**  
BULLDOZERS • GRADEBUILDERS • SCRAPERS • ROOTERS • ROAD DISCS • MAINTAINERS • SNOW PLOWS

### All Model Buckeye Clippers Feature Single Lever Hoist and Dipper Trip

The Buckeye Traction Ditcher Co., Findlay, Ohio, has announced that their Model 50, ½-yd., Model 60, ¾-yd., and Model 70, ¾-yd. Buckeye Clipper shovels feature a single lever for controlling both hoist and dipper trip operations, making it unnecessary for the operator to reach for a second lever to dump the dipper load. These operations and all other actions in the working cycle—swing, crowd, travel



*Single Lever Hoist and Dipper Trip Featured on Clipper Shovels*

and boom hoist—are vacuum controlled, through the patented Mevac System. Six toggle levers control all operations. The maker claims that in addition to the speed provided by eliminating the lost motion of shifting long levers the Mevac vacuum control system eliminates condensation, moisture and freezing trouble and is not affected by temperature or climatic conditions.

### New Maintenance Roller

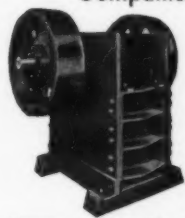
A new maintenance roller designed for general light rolling work has been brought out by the General Iron & Steel Corp., 276 Lafayette St., New York City, N. Y. The roller is 24 in. in diameter and 24 in. wide. Its weight is 260 lb. empty and 625 lb. water filled. The travel speed is variable

Established in 1885

# Gruendler PORTABLE Crushing Plants

## For Maximum Reduction at the Lowest Cost Per Yard

Recognized by Federal, State, City and County Highway Engineers and Private Construction Companies as equipment embodying the most modern and efficient engineering, including ease of operation with complete safety.



Heavy Armour Plate  
JAW CRUSHER



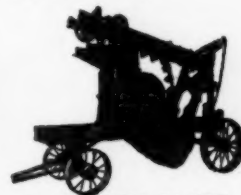
HAMMER CRUSHERS  
From 1 ton per hour to  
500 tons per hour



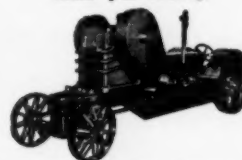
Gruendler Portable Windrow Maintenance Jaw Crusher

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CRUSHERS - PULVERIZERS - GRINDERS



Portable TWO-IN-ONE  
Hammer Mill for both  
Rock Crushing and  
Lime pulverizing.



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JAW CRUSHER



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and Facilities in*

# DAYTON OHIO

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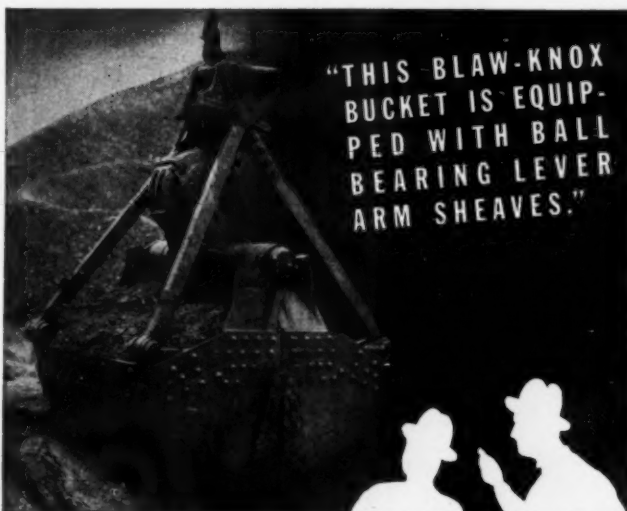


400 ROOMS  
\$2.50  
WITH BATH from

# HOTEL MIAMI

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ALBERT PICK  
HOTELS

Among the better hotels in the middle west Hotel Miami leads in matters of comfort and superior facilities. The spacious, tastefully furnished rooms, at moderate tariffs offer daily respite to scores of experienced travelers. The Crystal Bar is a popular Dayton rendezvous. New Purple Cow Coffee Shop



"THIS BLAW-KNOX  
BUCKET IS EQUIP-  
PED WITH BALL  
BEARING LEVER  
ARM SHEAVES."

As a matter of fact this feature is standard equipment and does not cost more. It is especially desirable where the bucket handles loose granular materials because it keeps lubrication in and dirt out. This and many other desirable features of Blaw-Knox Buckets is fully described and illustrated in Bulletin No. 1606. Write for it today.

17

# BLAW-KNOX

Digging  
and  
Rehandling

# BUCKETS

BLAW-KNOX DIVISION  
OF BLAW-KNOX CO.  
Farmers Bank Bldg. Pittsburgh, Pa.

up to 2 miles per hour. The engine is a Briggs-Stratton, 4 cycle, developing 1 H. P. The transmission is heavy duty roller chain and machine cut sprockets running on ball bearings. The drum roller is heavy steel plate electrically welded with rounded edges to prevent cutting. Standard machine includes steel scraper with counterweight. A spiked rear roller for cultivating and aerating lawns or putting greens can be attached at slight additional cost.

#### Wire Rope Connector

A connector of the vibration damping design that grips the cable with graduated compression, feathering off from maximum at the rear to zero at the front, has been placed on the market by the Electroline

Co., 4009 South La Salle St., Chicago, Ill. The connector is a compact, streamlined assembly of three simple units—a sleeve which slips over the end of the wire rope, a tapered plug which is inserted to separate and hold the strands of wire in the sleeve and a covering socket which securely locks the cable. Installation may be made with ordinary mechanic's tools . . . and no hot metal is required. A unique feature of the connector is an "Inspection Hole" which enables the workman to see at a glance the perfection of the twist joint, with complete bond between cable, tapered plug and sleeve. For rope sizes of  $\frac{1}{4}$  in. and larger, the standard connector is available in black, hot-galvanized and cadmium-plated finishes. For rope sizes  $\frac{1}{2}$  in. and smaller, the indus-



Three Types of Electroline-Fiege Connectors

trial connector is available in black, hot-galvanized, and cadmium-plated steel; also in bronze, stainless steel and monel metal.

#### New Scraper

A new single bucket carryall scraper has been added to the line of R. G. Le Tourneau, Inc., Peoria, Ill. This is the Model L.S., rated at 8.2 cu. yd. struck capacity and 11 cu. yd. heaped. Several new features are incorporated in this new model. Loading is made easier by a longer and steeper blade base. Additional yards are made possible by higher sides and a built up apron which retains full loads and prevents spilling. A newly designed "A" frame gives more room for bigger loads, speeds up loading, facilitates dumping of sticky materials, and also



Model L.S. Carryall

adds structural strength. With the apron cable dead ended on the apron, all hoist and unloading cables are now placed up and out of the dirt, eliminating abrasive cable wear. The power demands of larger loads are reduced by centering fixed sheaves at the tailgate so that a direct pull is attained on the positive ejection tailgate. At the option of the purchaser, the Model L.S. Carryall can be fitted with either four or six large tires that give ample flotation and necessary compaction. Plenty of tire clearance, under any reasonable conditions, is assured at all times by a goose neck type yoke.

#### New Transit-Level

A new instrument that can be used both for levels and for lines and grades without removing the telescope from its standards has been added to the line of Warren-Knight Co., 136 N. 12th St., Philadelphia,



The Symbol  
of Precision  
and  
Reliability



## Continental Power can take it with both ease and economy

Here it is! The new Continental Red Seal Power unit for all industrial and field uses. All dressed up and plenty of places to go.

The same smooth performance. The same dependable power. The same frugal economy — plus beauty and advanced styling. Many new features have been added to further emphasize Continental Leadership.

At the International Petroleum Exposition this new Red Seal engine had the reception of a champion — and well it should, for a champion it is.

21  
RED SEAL  
SIZES  
for  
EVERY  
OPERATION

#### Write Today

Tell us your requirements to replace obsolete equipment as well as your needs for new equipment . . . Balanced power based on recommendations from Continental Engineers will solve your power problems.

**Continental Motors Corporation**  
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### This Utility Spray Tank

Here's the Littleford No. 101 Utility Spray Tank that gives users three units in one. Has Spray Bar for penetration work, Hand Spray Attachment for patch work, and Pouring Pot Outlet for crack filling. No. 101 is pump type outfit with

two Littleford Torch Type Vaporizing Burners. Will apply Tar, Asphalt, Emulsions, Road Oils or cutback. Made in three styles—Two Wheel Trailer, Four Wheel Trailer, and Truck Mounted. Sizes 300 to 1200 gallons.



## LITTLEFORD

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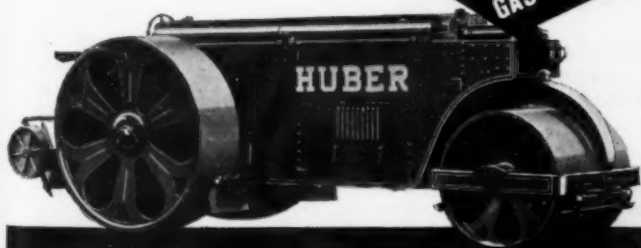
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## DO IT BETTER

## DO IT CHEAPER

★ If you want plenty of power . . . speed . . . sturdy construction . . . low operating and maintenance cost . . . dependable service and properly engineered features, investigate HUBER. Write for complete descriptive features.

**THE HUBER MFG. CO.**  
MARION, OHIO, U. S. A.



**6 SIZES**  
5 to 12 ton  
GAS or DIESEL

## Buy a HUBER



### The D-K SPREADER AND FINISHING MACHINE *Will Cut Your Costs*

- ★ **SPEED**—1,000 to 1,200 tons of hot or cold mixed material per day right over the old road surface—no scarifying, no filling of holes or ruts needed.
- ★ **ECONOMY**—Initial investment is low, it brings big savings in labor and eliminates waste of materials.
- ★ **SMOOTH ROADS**—This spreader rides on the finished surface so that its work is not affected by worn surfaces of old roads. Depth and width of spread is accurately controlled. Front wheel heights are adjustable. Extra wheels are supplied for use when the machine is to be transported from one job to another.

*Write today for information on this new money maker for spreading and finishing.*

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### "HOW DO I MAKE MONEY ON THESE SMALL JOBS?"



Why—I have a set of **BLAW-KNOX STEEL FORMS** which will build most any cross section I bid on.

Steel gives a nice, dense, smooth finish—expensive hand finishing unnecessary.

**NATURALLY MY COSTS ARE LOW."**



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## BLAW-KNOX

BLAW-KNOX DIVISION  
OF BLAW-KNOX CO.  
Farmers Bank Bldg. Pittsburgh, Pa.

Street and  
Sidewalk

## STEEL FORMS

Pa. For leveling, the transit-level is used like a transit by centering the telescope level bubble before each reading by means of the telescope axle tangent screw. For taking levels in different directions, it is necessary only to re-center the bubble by means of the tangent screw before each reading. Features of this transit-level include: The telescope has a power of 22x. The lenses permit a sharp focus as close as 4 feet from the center of the instrument. The telescope, with its axle, is mounted in V-bearings in standards, similar to those of a transit and is held in any desired position by means of a clamp. It has a tangent screw attached for accurate setting of level and graduated arc. A vertical arc mounted on the axle, with a vernier reading to five minutes, enables the oper-

ator to set grades and vertical angles quickly and accurately. A plate control level is mounted on the top plate. This is very desirable for checking the instrument set up to insure accuracy. The vertical range of the telescope is approximately 110°. The telescope level has a sensitivity of approximately 60 seconds, making possible very accurate level work.

#### New Truck Tires

Following new developments in engineering and highway and laboratory testing, announcement of two new high-mileage truck tires, the Hi-Miler rib and Hi-Miler all-weather tread, has been made by The Goodyear Tire & Rubber Co., Akron, O. Treads of both tires are stated to be tougher and flatter, putting more rubber in contact



#### New Goodyear Truck Tires

with the ground and the tread depths are greater, deeper than have ever been provided for general purpose work. Undertreads, too, have been upped on an average of 25 to 30 percent. Improvements in construction are not confined to outer sections of these new tires. There are stated to be many mileage-contributing factors inside as well. Heat-resisting, low-stretch Supertwist cords that retain up to 71 percent of their tensile strength under extreme temperatures (250° F.), plus multiple compounds to protect against separation and heat fatigue, help distribute the shearing stresses more evenly between tread and tire body. The new tires are designed for use on trucks and buses in general on-the-road service where uniform wear and long mileage are major considerations. With two types of tread, extra traction for all road conditions is available in addition to long-wearing qualities.

#### New Stopehamer

A new 116-lb. stopehamer with automatic rotation has been added to the line of Ingersoll-Rand Co., 11 Broadway, New

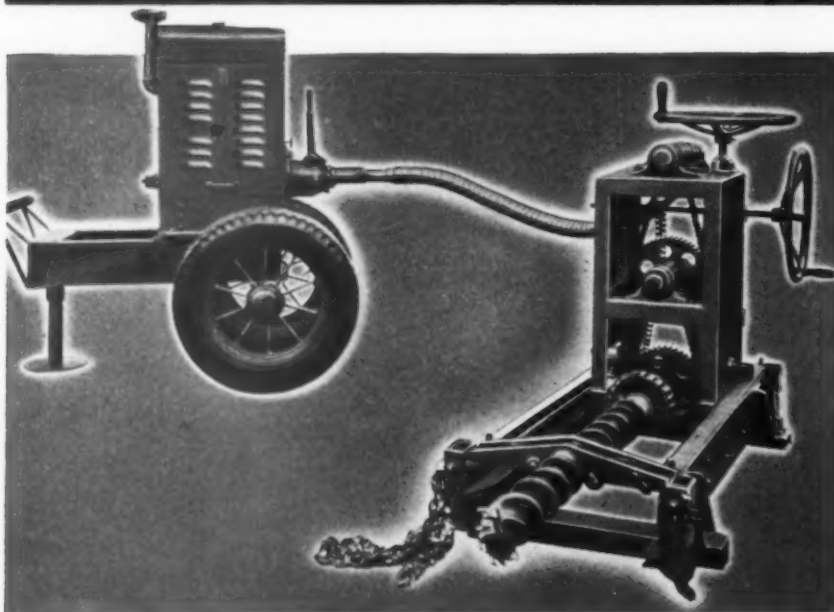
York. The center of gravity of this stopehamer is such that the machine assumes a natural drilling position when it is picked up. This facilitates raising the machine to any operating position. Other "Ease of Handling" features include: feed-leg control which permits many fine variations in feeding power; short over-all height of only 59 in. prevents the drill from being top-heavy; a plate-type throttle valve provides half throttle position for "collaring" holes; and the location of the exhaust on the opposite side of the cylinder from the operating controls.

**R-58 Stopehamer** One of the many durability features of this stopehamer is an automatic chuck cleaning system which keeps the drill free from cuttings and water and at the same time provides ample lubrication for all front-head-bearing surfaces.

#### New Pipe Threaders

Five new ratchet and three-way threaders for small pipe have been added to the Ridgid line of pipe tools made by The Ridgid Tool Co., Elyria, O. Nos. 00R, 0R and 11R are of new, stronger design in

## Parmanco HORIZONTAL DRILLS



## Stop . . . AND THINK!

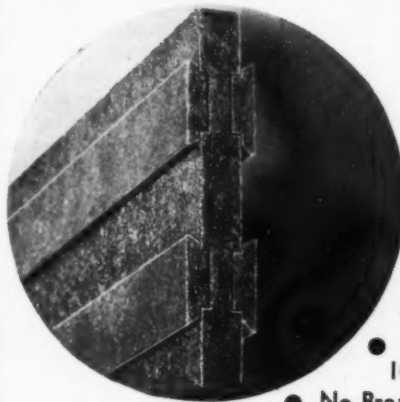
That cutting pavements causes more damage than traffic.  
That trenched yards are eyesores for years.  
That public hazard can be eliminated.  
That obstructing traffic is not necessary.  
That you now can put services in to grade.

That you can save money, time and create good will by using PARMANCO. PARMANCO Utility Drills are made in two sizes, PARMANCO JUNIOR for drilling 4 inch holes up to 50 feet, and the PARMANCO GENERAL UTILITY for drilling longer distances or drilling larger holes. ALSO PARMANCO SENIOR for drilling up to 14" holes.

WRITE US YOUR DRILLING PROBLEMS

**PARIS MANUFACTURING CO., INC.**  
PARIS, ILLINOIS

## A NEW EXPANSION JOINT by SERVICISED



### The Self-Adjusting Joint

... engineered to have all the qualities you want—a tested, proved solution to the expansion joint problem. Ribs of sponge rubber key permanently into the concrete; core is waterproofed fiber.

- Waterproof
- Non-Extruding
- Will Fill Opening 100% At All Times
- No Breakage in Handling

### Buy Servicised! . . .

Aiming constantly to build a BETTER joint, Servicised has been pioneering in the expansion joint field since 1914. Buy Servicised—for DEPENDABLE joints—at reasonable cost. Next time you need joint of ANY material—fiber, asphalt, sponge rubber, cork or cork rubber—to meet ANY specifications . . . buy Servicised. You can RELY on the product.

## SERVICISED PRODUCTS CORP.

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### Unequalled in efficiency for PICKUP and DELIVERY!

It costs but a few cents per cubic yard to dig, haul 100 ft. to 1500 ft. and automatically dump a big load of any class of material from hard-packed gravel to sticky clay with a SAUERMAN Power Drag Scraper or Slackline Cableway. Yet, it's being done every day, all over the world. SAUERMAN Machines are designed in suitable sizes and types to cover the requirements of every dig-and-haul job and each SAUERMAN Machine, whether large or small, offers the greatest possible economy of power and labor in handling its rated yardage of materials.

**SAUERMAN BROS. Inc.**

488 S. Clinton St. Chicago, Illinois

## JAEGER Adjustable SPREADER



BASE

SURFACE



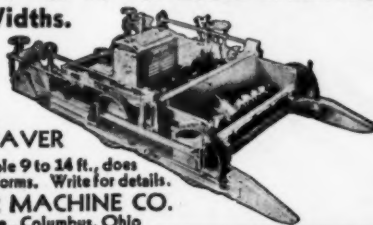
Smoothly Spreads Stone, Macadam and Bituminous—1" to 10" of Loose Material, 8 to 11 Ft. Widths.

Lays low cost roads, faster, smoother and with real savings.

### JAEGER BITUMINOUS PAVER

power-driven, adjustable 9 to 14 ft., does precision job without forms. Write for details.

THE JAEGER MACHINE CO.  
223 Dublin Ave., Columbus, Ohio



## NO DETOURS



### when . . . YOU USE THE *Brooks* LOAD LUGGER

Here is the short-cut to economy on material moving jobs where loading is done by hand. With a Load Lugger mounted on a truck chassis, operating with five to ten dump buckets, you can save 50% or more on material handling jobs. Efficient for highway construction, street repair, and other uses. Ask about our Special Introductory Offer.

Distributors in All Principal Cities

**Brooks Equipment & Mfg. Co.**  
507 DAVENPORT ROAD, KNOXVILLE, TENNESSEE





all-steel malleable-alloy. They thread  $\frac{1}{4}$ -in. to  $1\frac{1}{4}$ -in. pipe. Separate sets of semi-high-speed tool steel chaser dies are accurately cut, easily removed for regrinding. In No. 00R, die heads are quickly locked in or removed by a pull of the ratchet knob. In Nos. 0R and 11R die heads push out easily for changing, snap into ratchet ring from either side, can't fall out. Electrical conduit dies furnished at regular die prices. No special dies are needed for threading pipe close to wall; it is only necessary to turn dies upside-down and shift to positions marked on die-heads. A carrier which conveniently holds the ratchet ring and set of dies is supplied with all complete sets at no extra cost. The Series Nos. 30A and 31A three-way threaders for small pipe have vir-

tually the same features as the series described above. They are compact, have double ball-end handles and thread pipe from  $\frac{3}{8}$  in. to 1 in.

#### New Diesel Tractor

A new 54-h.p., Model "HD 7", tractor has been announced by the Allis-Chalmers Mfg. Co., Milwaukee, Wis. This brings the company's line of 2-cycle General Motors diesel powered tractors up to 3 models. The others are the 79-h.p. "HD 10" and the 108-h.p. "HD 14." This new 54-h.p. tractor weighs approximately 13,000 lbs. in the 63-in. tread model. The 52-in. tread machine weighs approximately 12,500 lb. The four speed transmission gives a choice of



HD-7 Diesel Tractor

forward speeds from 1.84 to 5.82 m.p.h. Reverse is 2.19 m.p.h. Standard equipment of the new "HD 7" includes the G.M. 2-cycle diesel engine, 16-in. track shoes, positive seal truck wheels and front idlers, Velvetouch bimetallic steering clutches and brakes, full width crankcase guard, muffler, adjustable radiator shutters and electric starting and lighting equipment.

#### New Grease Gun

A new low pressure delivery foot gun, designed as Model 6697-A, has been announced by the Alemite division of Stewart-Warner Corporation, Chicago, Ill. Manually operated, this latest Alemite product has been designed to fill certain specific needs in the automotive and industrial fields. It is claimed to be particularly adapted for the following purposes: As an auxiliary to the stationary power gun used ordinarily among large fleets and service stations. As standard equipment for small fleets and service stations where lubrication jobs are not of sufficient volume to warrant installation of a stationary power gun. For use in the field or where power is not available. For lubricating many forms of industrial equipment. The gun has a capacity of 25 lbs., and pumps approximately 1 cu. in. of grease per stroke. Maximum pressure when operated by hand is 3,000 lb., and when operated by foot, 5,000 lb. It is equipped with a 7-ft. hose and delivers 1 ounce of lubricant to every three strokes. The new gun is described as a companion to the Alemite high pressure foot gun, Model 6699-A. This latter gun, of 15-lb. capacity, is designed primarily for chassis bearing lubrication at high pressures. The new gun, operating at a lesser pressure, is stated to offer the advantage of faster delivery, as well as greater capacity. Both guns operate on the same unique principle: hand operation for light bearings and foot operation for tighter bearings. The new gun weighs 39 lb. and stands 19 $\frac{3}{4}$  in. It is easily carried about and is provided with a broad squat base for immediate positioning.



Model 6697-A Grease Gun

## For Better Roads ... And Pavements



**BITUVIA ROAD TAR**—Because of construction and maintenance economies and because of its traffic safety BITUVIA road tar construction offers distinct advantages to the contractor and to the public. Deep penetration holds the aggregate firmly for long service. BITUVIA is easily applied. It is highly resilient and skid-resistant. Made in seven types to meet any Federal, State, County or Municipal specifications.



#### PLASTUVIA CRACK FILLER

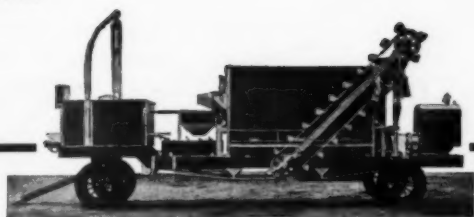
The unusual ability of this filler to withstand a wide range of temperatures—from bitter cold to torrid heat—without flow or traffic "pull" in summer, or chipping in winter, makes it an outstanding product. The ease with which it is applied, and the manner in which it holds tenaciously to concrete and brick surfaces characterize this material. Your inquiry will bring you further information about these products.

#### REILLY TAR & CHEMICAL CORPORATION

Executive Offices: Merchants Bank Building, Indianapolis, Indiana

2513 S. DAMEN AVENUE, CHICAGO, ILLINOIS 300 FIFTH AVENUE, NEW YORK, N. Y. 51 LOUIS PARK, MINNEAPOLIS, MINN.

FIFTEEN PLANTS TO SERVE YOU



## STREET REPAIR TRUCKS

Portable Asphalt Plants—Dryers  
Pug Mixers—Asphalt Kettles  
Weed Burners—Torches

Write for Catalog

Elkhart White Mfg. Co. Indiana

## O K AIR COMPRESSORS



are made in a full range—in both single and two stages: Gasoline, diesel and electric driven. Illustration shows TS 210—the only dual wheel compressor on the market.

Ask for Bulletin C-40 for complete information

**O. K. CLUTCH & MACHINERY CO.**  
COLUMBIA, PA.

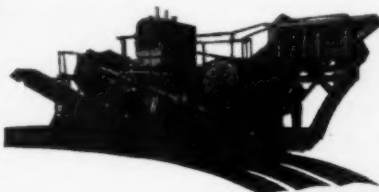
## 20 MODELS

ASSEMBLIES and CAPACITIES

to fill your yardage contracts

PICK THE RIGHT PLANT

When you buy a crushing and screening plant you want all the worthwhile features. DIAMONDS include every feature a plant should have.



Note the angle and vertical rotor lifts; they are patented DIAMOND features acknowledged by all. Full anti-friction bearings assure low production costs. More compact, short conveyors, no bucket elevator, short wheel base, lower heights, easily moved.

It Will Pay You to Investigate DIAMOND Equipment

**DIAMOND IRON WORKS INC.**  
AND THE MAHR MANUFACTURING CO. DIVISION  
MINNEAPOLIS, MINNESOTA, U. S. A.

## ROADS AND STREETS

The preferred magazine of the highway contractor. It reaches more INDIVIDUAL highway contracting firms than any other engineering construction paper . . . and in addition gives economic coverage of the State, County, Municipal road and street departments vested with specifying and buying authority.

## America's Most Compact CIRCULATING SYSTEM

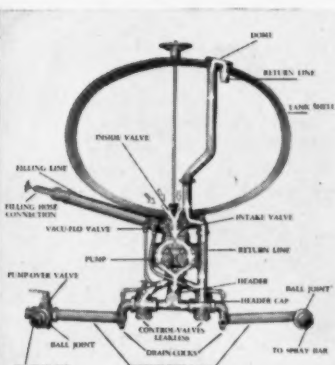
FILLS TANK UNDER OWN POWER



TRANSFERS FROM ONE TANK TO ANOTHER



SUPPLIES MATERIAL FOR HAND SPRAY



### TAKES SHORTEST LINE FROM TANK TO SPRAY BAR!

Here's the secret of Etnyre's success in handling lightest to heaviest grades of asphalt, road oil, tar and emulsion! No waste of heat or energy from long travel of hot or cold material. No pipe fittings—service any part without disturbing remainder of system—or take up loose connections without strain on other members! See your nearest Etnyre dealer or write for "FOTO-FACTS"—amazing new pictorial catalog that tells all. Act now! E. D. Etnyre & Co., Oregon, Illinois, U. S. A.

## ETNYRE

**BLACK TOPPER**  
ROAD BUILDING SYSTEM



## TEN SECONDS

to fasten or unfasten the cable from power control unit. No more kinked or frayed cables to cut off.

In time, labor, and cable saved THE HAGEN CABLE CLAMP will pay for itself in a week's time.

Try them on your power control units.

Sold with a guarantee that you will be satisfied or your money back.

PRICE \$8.50 EACH POSTPAID

**HAGEN CLAMP CO.**

522 West 76th St., LOS ANGELES, Calif.

"THIS BUCKET'S GOT  
WHAT IT TAKES"



‘ Tearing out this old Baldwin Locomotive Works foundation at Philadelphia was about as tough a test as a bucket ever gets. Wm. Geppert, Inc., owners of the bucket, report that the 1/2-Yard Williams Multiple Rope did an extraordinary job in digging into and removing the massive stone and heavy chunks of concrete.

Powerful in biting and gripping, fast in action, and ruggedly built with welded construction at vital points, Williams Buckets are without a superior for hard service.

Bulletins describing all types  
of Williams buckets sent  
FREE on request.

## THE WELLMAN ENGINEERING CO.

7003 Central Avenue  
Cleveland, Ohio

**WILLIAMS**  
*Buckets*  
built by WELLMAN

## WITH THE MANUFACTURERS

V. E. Trimble Appointed Sales Manager  
of J. D. Adams Co.

V. E. Trimble has been appointed sales manager of J. D. Adams Co., Indianapolis, Ind. Prior to his appointment he was district manager of the north-central and northeastern part of the United States, which position he has held since 1929. He joined J. D. Adams Co. as a salesman in 1913 and up until 1929 he served as a salesman on various territories throughout the United States. His sales experience qualifies him well for his new position. Mr. Trimble will be succeeded as district manager by F. L. Branson, who has been with the company since 1925, serving in the capacity of salesman and assistant district manager.

G. B. Flanigan Appointed New York  
District Manager for Chain Belt

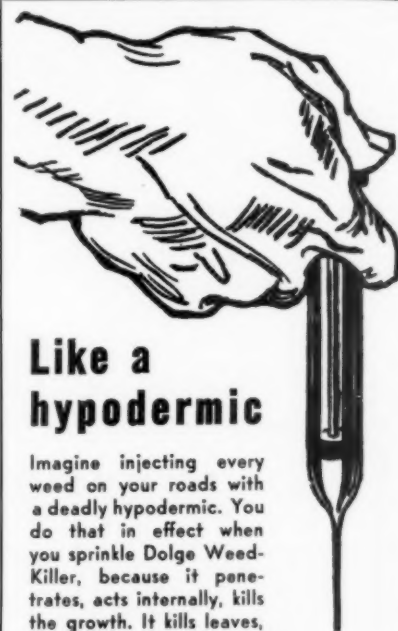
Chain Belt Co., Milwaukee, Wis., announces the appointment of G. B. Flanigan as New York district manager to succeed W. H. Quinn, who died recently after 17 years' association with the company. Mr. Flanigan entered the employ of the company immediately after graduation from the Sheffield Scientific School of Yale University in 1925. For several years he was located at Milwaukee, in both manufacturing and sales departments and in 1928 became a member of the New York District Sales Force. In 1937, he was appointed Chicago district sales manager.

Cleveland Rock Drill Co. Establishes  
Two New Branch Offices in the West

Clarence L. Seaman, well known equipment salesman, has been appointed district manager of The Cleveland Rock Drill Co. with headquarters in Berkeley, California. The company has also opened an office with service and supplies at Wallace, Idaho. Clarence F. Zeuch, Mining Engineer, and graduate of the Case School of Applied Science and of Idaho School of Mines, is in charge at Wallace. Cleveland has recently moved the New York Office to 30 Church St., where complete sales and service facilities are maintained, with Sam McCart as District Manager.

Freers Joins Engineering Staff of  
Marmon-Herrington

Newest addition to the engineering staff of the Marmon-Herrington Co., Ind., manufacturers of all-wheel-drive motor vehicles, is George H. Freers. Widely known in automotive and engineering circles, Mr. Freers has an extensive engineering background that will be valuable in the company's increased production activities. The capacity of the Marmon-Herrington plant, located on a 16-acre tract at West Washington and Harding Sts., Indianapolis, is being doubled by a new building program. Enlarged manufacturing facilities are required, according to company officials, to meet government requirements for all-wheel-drive trucks and other special equip-



## Like a hypodermic

Imagine injecting every weed on your roads with a deadly hypodermic. You do that in effect when you sprinkle Dolge Weed-Killer, because it penetrates, acts internally, kills the growth. It kills leaves, stems, roots and all. Kills poison ivy and other hardy, deep-rooted growth. Write for full details, quotations, free Dolge Ground Maintenance Manual.

## Dolge Weed-Killer

THE C. B. DOLGE COMPANY  
WESTPORT, CONN.

*Your Gracious Host..  
From Coast to Coast*



In NEW YORK

The Gotham



In CHICAGO

The Drake

The Blackstone



In LOS ANGELES

The Town house



In BELLEAIR, FLA..

Bellevue Biltmore

**KIRKEBY  
HOTELS**



ment as well as growing demands for the company's products for commercial use. After graduating from the Rose Polytechnic Institute, Mr. Freers served in the engineering departments of such firms as the Interstate Automobile Co., United States Motors, Packard Motor Car Co., Alden Sampson Truck Co., the Marmon Motor Car Co. and the Stutz Motor Car Co. At one time he held the chairmanship of the Indiana section of the Society of Automotive Engineers.

### Don't Show This to Your Son

Bolivar County, Mississippi, probably has the smallest working "Caterpillar" track-type tractor in existence—and very likely has the youngest tractor owner.

Three-and-one-half-year-old Marcus Ming, Jr., son of Marcus Ming, Road Superintendent for County District No. 3, is owner and operator of the 1½ H.P. model. Being something of a "Caterpillar" fan, he got the small tractor as a present from his father, who operates a Diesel D7.



Ming, Sr. and Junior and Their Tractors

The illustration shows Marcus Ming, Sr., on the county D7 with his son driving his own machine alongside. The 1½ H.P. tractor isn't just a miniature, either, but is capable of producing some worthwhile work. Young Ming puts it to work on hauling jobs—pulling playmates' wagons here and there; and getting himself from place to place in a hurry.

The little tractor has a top speed of two miles an hour, and is equipped with an electric starting motor and electric lights. Power comes from a single-cylinder gasoline engine, and the transmission is a miscellaneous assortment of gears. The rear axle comes from a miniature automobile. Steering is done in the regular track-type manner; with clutches to stop the flow of power to the tracks. The tractor has both forward and reverse speeds.

### Asphalt Institute Selects Dallas for National Conference

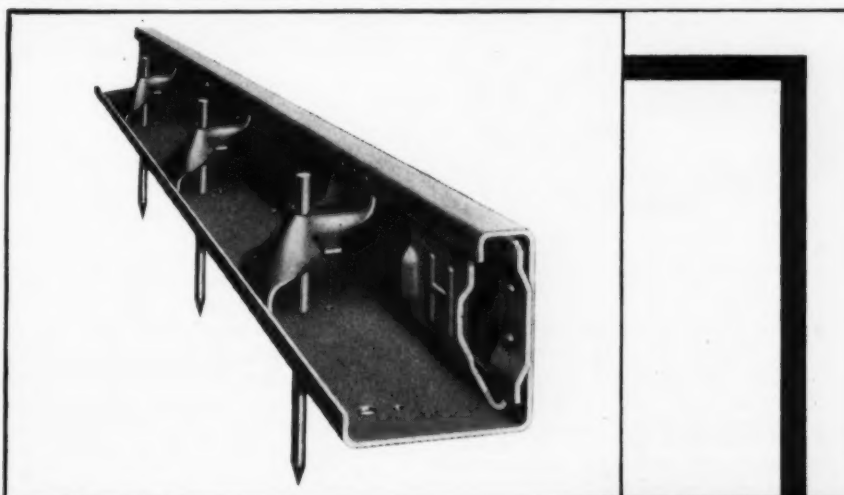
At its Board meeting, held June 19, the executive committee of the Asphalt Institute reported its selection of Dallas as the place for the Thirteenth National Asphalt Conference and the time the week of December 9. J. E. Pennybacker, Managing Director of the Institute, announced that Dallas had been chosen after considering many competing cities. It is the cus-

tom to rotate this selection,—the three preceding Conferences having been held in New Orleans, Memphis, and Los Angeles, respectively.

### Marmon-Herrington Expands

In preparation for the part which the government has asked it to play in the new national defense program as well as to meet the increasing demand for its products for commercial use, the Marmon-Herrington Co., Inc., Indianapolis, Ind., manufacturers of all-wheel-drive motor vehicles, track-laying tractors and combat tanks, is doubling the size of its factory. The company's new building program, which is already underway, includes an extension to

the main assembly plant to double its present capacity; and the erection of an additional new building; the construction of a spur track into the plant, from the Belt railroad to provide 300 ft. of loading docks, and the complete modernization of the boilerhouse. Construction will be of brick and steel and will conform to the modern monitor type design of the present factory buildings. The addition to the assembly plant will extend this structure to occupy the company's entire frontage of a city block on Washington Street, U. S. 40 Highway. Plans for the plant enlargement were developed by the H. K. Ferguson Company, engineers, Cleveland, Ohio, who are also in charge of construction. The work is to be completed by Sept. 1.



**Heltzel Superior Heavy-Duty Road Forms have established a new low cost . . .**

1. By building more miles of concrete slab.
2. By elimination of expensive upkeep and repairs.

**. . . and because Heltzel forms are easier to set and strip — form setting costs are reduced to a minimum. Write for complete information and descriptive literature. Catalog S-19.**

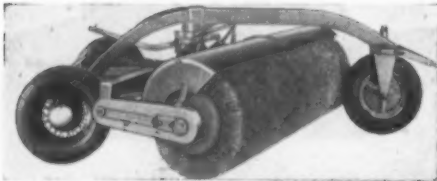


**Heltzel**  
BUILDS IT BETTER

BINS, Portable and Stationary  
CEMENT BINS, Portable and Stationary  
CENTRAL MIXING PLANTS  
BATCHERS (for batch trucks or truck mixers with automatic dial or beam scale)  
BITUMINOUS PAVING FORMS  
ROAD FORMS (with lip curb and integral curb attachments)  
CURB FORMS  
CURB AND GUTTER FORMS  
SIDEWALK FORMS  
SEWER AND TUNNEL FORMS  
CONCRETE BUCKETS  
SUBGRADE TESTERS  
SUBGRADE PLANERS  
TOOL BOXES  
FINISHING TOOLS FOR CONCRETE ROADS

**HELTZEL STEEL FORM & IRON CO.**  
WARREN, OHIO • U. S. A.

## GRACE 2-WAY AXLE DRIVEN SWEEPER



### RAPID FIRE HEATER



- *Grace 2-Way Axle Driven Sweeper*—the modern traction driven sweeper that successfully meets every problem of any contractor.
- *Rapid Fire Heater*—A fast-pumping, fast-heat circulating heater that heats 10,000-gallon insulated cars at 50° per hour. Write for detailed information and prices.

W. E. GRACE MFG. CO. 6000 Holmes St. DALLAS

## CATAPHOTE Night-Way OUTLINERS



REDUCE  
NIGHT ACCIDENTS  
RELIEVE  
DRIVING STRAIN

Chart the course with a continuous stream of light over 3,000 feet ahead.

Reduce hazards of approaching, blinding headlights—sides of road always visible.

Equally effective when installed on super highways between lanes, on pavement edge or shoulder edge.

The double-faced steel housing holds twelve large Cataphote reflector buttons (6 on each side) made of optical glass.

SMALL INVESTMENT  
NO MAINTENANCE COST

WESTERN CATAPHOTE CORP.

All types of signs, standard, semi-standard, special for your traffic problem.

958 Wall Street Toledo, Ohio

### SKF Expands

The illustration shows the new No. 2 plant that will materially increase the capacity of SKF Industries, Inc., Philadelphia, in the production of more than 6000 types and sizes of ball and roller bearings—one of the most modern plants in Philadelphia, located on the Pennsylvania Railroad at Bridge St., and the third of SKF's Philadelphia factories. The 1-story, saw-tooth, daylight type building contains 226,000 sq.



Plant No. 2 of SKF

ft. of floor space on a plot of 15 acres of beautifully-landscaped lawns, and will be devoted exclusively to the manufacture of antifriction bearings. Executive, sales, and sales engineering offices will remain at Plant No. 1 at Front St. and Erie Ave., site of the old Hess-Bright Manufacturing Co. which was founded in 1904. Here, wing after wing has been added until practically all of the available manufacturing space has been utilized. The Atlas Ball Co., a subsidiary, will continue to manufacture balls at Glenwood and American Sts. All three plants are conveniently located to each other.

### P&H Revives Magazines for Operators

After an interval of several years since its last issue, *The P&H Crowd*, a magazine for excavator operators, has made its re-appearance. The magazine is a bi-monthly sponsored by the Harnischfeger Corporation of Milwaukee, and is freely circulated to operators all over the world. The magazine is planned as a medium for the interchange of ideas and experiences of shovel operators. Those who submit material become members of "The P&H Crowd." In response to pre-publication requests, considerable material has been assembled for the first (May-June) issue, ranging from an account of a creek-digging job in up-state New York where the water stood waist deep, to a letter from the Philippines where the temperature was 96.3 and "one doesn't dare put his bare hand on the cab." A roster of the 800-odd operators already receiving *The P&H Crowd* appears in the first issue. A card is also provided for new subscribers. Excavator owners or operators may have their names put on the mailing list by addressing the Harnischfeger Corporation, 4400 W. National Ave., Milwaukee, Wis.

Kenneth Smith Appointed Executive Vice-President California Redwood Association

Kenneth Smith has been appointed executive vice-president of the California Redwood Association, 405 Montgomery St., San Francisco, Calif. Mr. Smith was formerly secretary-manager of the Lumber and

## Speed the Work, Save the Dollars



THE BURCH "ALL PURPOSE" is an all year round machine—used for seal coat and resurfacing, it is also the ideal machine for ice control. Belt driven, no gears, can be attached to any truck in THREE minutes and ready to go. Carries its own power, does not depend on speed of truck.

Write for Bulletin APS-1

Manufactured by

**The BURCH CORPORATION**  
CRESTLINE, OHIO

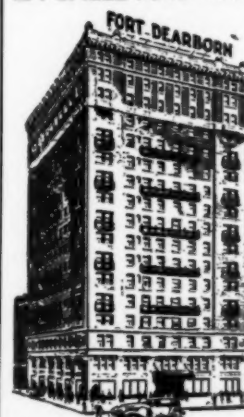
Conveyors, Maintenance Equipment  
Dump Bodies and Hoists

## Sparkling New HOTEL FORT DEARBORN

BEAUTIFUL NEW COCKTAIL LOUNGE  
POPULAR PRICED RESTAURANT

Harold M. Harper, Mgr.

LA SALLE AND VAN BUREN STS.



550 ROOMS  
From \$1.50

OPPOSITE  
LASALLE ST.  
STATION

CHICAGO

Allied Products Institute of Los Angeles, composed of the retail dealers in that market—one of the largest in the country. In that capacity, and previously as sales manager of E. K. Wood Lumber Co., Los Angeles, he acquired an intimate acquaintance with the problems of the retailer. The California Redwood Association, which he now directs, is composed of seven large-scale producers of redwood lumber, Dolbeer & Carson Lumber Co., Hammond Redwood Co., Hobbs, Wall Lumber Co., Holmes Eureka Lumber Co., Monterey Bay Redwood Co., The Pacific Lumber Co. and Union Lumber Co.

#### Elastic Stop Nut Moves to New Plant

Elastic Stop Nut Corporation has moved its general offices from Elizabeth, N. J., to its new plant at 2332 Vauxhall Road, Union, N. J., a suburb of Newark. The transfer of manufacturing equipment, which has been in progress for several weeks, has been completed. The new plant will be used exclusively for the manufacture of elastic stop self-locking nuts and has been carefully planned to assure smooth flow of production. It was built by The Austin Co. A feature of interest is the fact that all of the steel construction is fastened with bolts and elastic stop nuts, instead of rivets. This corporation's Houston, Tex., office has been moved to The Merchants and Manufacturers Bldg.

#### John Weiler Named President Mullins Body & Tank Company

The Mullins Body & Tank Co., 2081 S. 56th St., Milwaukee, Wisc., long-time Gar Wood distributors, has announced the recent appointment of John Weiler as president, succeeding C. J. Mullins, who is no longer associated with the company.

#### R. T. Steindorf Appointed District Manager Chain Belt

R. T. Steindorf has been appointed district manager of the Chicago office of Chain Belt Co. of Milwaukee, Wis. After graduation from Purdue University in 1924, Mr. Steindorf joined the Chain Belt Co. as an apprentice. Since that time he has worked in both the engineering and sales departments of the company.

#### Harry T. McDonald Dies

Engineers throughout the United States were shocked and grieved to learn of the sudden death of Harry T. McDonald, research engineer for Caterpillar Tractor Co., at his home in Peoria, Ill. He succumbed to a heart attack. Mr. McDonald had been employed by "Caterpillar" and its predecessor, The Holt Manufacturing Co., for 22 years. He joined the Holt company as a draughtsman. During the World War he was stationed at Camp Taylor in Montgomery, Ala. He was a member of the Officers' Training Corps, the United States Ordnance Advisory board, and the Society of Automotive Engineers. Recognized nationally as a leading authority on track-type tractor design, Mr. McDonald's advice was eagerly sought and his aid generously given to government departments in connection

## All Things Change-Colprovia Has Changed Too

COLPROVIA has been advancing in the asphalt paving industry for over a decade with new improved processes.

COLPROVIA ROADS, INC., is proud of the important place its products have in an important national industry.

The quality of COLPROVIA mixtures is controlled from the raw materials at the refinery and plant to the finished product on the road.

Research and experimental work, as well as supervision by a well equipped laboratory, a staff of chemists and engineers, have been fully justified by steadily increasing tonnage in public and private fields.

### If You Are Seeking a Permanent Non-Skid Pavement SPECIFY A COLPROVIA PROCESS

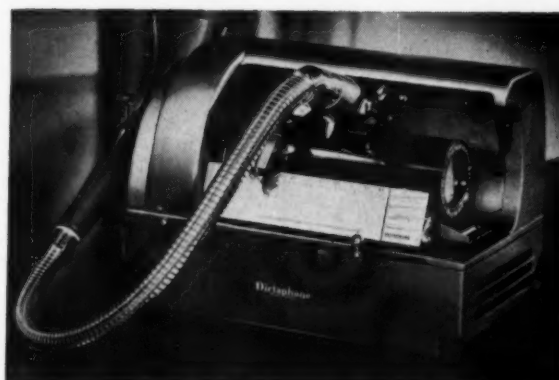


Write for location of nearest manufacturer to

## COLPROVIA ROADS, INC.

Laboratory  
801 Second Ave.  
New York, N. Y.

Executive Office  
183 East Main Street  
Rochester, New York



Here's a new partner for modern business . . . the new Dictaphone Cameo . . . always available at any time of the day or night for dictating reports, specifications, estimates, bids and general correspondence.

## DICTAPHONE CORPORATION

420 Lexington Avenue

New York, N. Y.

*The word DICTAPHONE is the Registered Trade Mark of Dictaphone Corporation, Makers of Dictating Machines and Accessories to which said Trade Mark is Applied.*



### Municipal and Contractors Equipment

Automotive Sweeper Replacement Parts and Supplies

America's Finest  
"GISCO" Gutter Broom Wire  
Sprockets • Chain Drag Shoes  
Squeegee Rubbers • Fibre



General Iron & Steel Corporation  
276 Lafayette Street  
New York, N. Y.

### Reliance— CRUSHING SCREENING and WASHING UNITS

• UP TO 2000 TONS A DAY •

|            |             |                |
|------------|-------------|----------------|
| Crushers   | Bins        | Drag-Lines     |
| Elevators  | Pulverizers | "GAYCO"        |
| Screens    | Feeders     | Centrifugal    |
| Sweepers   | Spreaders   | Air Separators |
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UNIVERSAL ROAD MACHINERY CO.  
Kingston, N. Y.

Canadian Representatives: F. H. Hopkins & Co., Ltd.  
340 Canada Cement Co., Montreal, Que., Can.

### NOVO BREAKER

PAVEMENT  
Demolishing  
Trimming &  
Cutting



#### BREAKING

The results obtained with the Novo Breaker in breaking up pavements, bridge floors, drives, curbs, etc., have proved beyond a doubt that here is the fastest, cheapest breaking method.

#### CUTTING

Hammer equipped with shearing knife is used for trench work, cutting without breakback in reinforced concrete. Also used in frost & trimming.

#### COSTS

Let us tell you the surprisingly low cost figure at which pavements can be broken by this method. It mounts on your truck. Send for information.

**NOVO ENGINE COMPANY**  
LANSING, MICHIGAN

246 PORTER ST.

Send literature and prices on the NOVO Pavement Breaker.

Name .....  
Address .....  
City ..... State .....

with the use and application of track-type machines. A native Peorian, Mr. McDonald was born Jan. 18, 1892. He attended the local schools and was graduated from Bradley Polytechnic Institute in that city. Surviving are his widow, formerly Miss Gladys Milliken, whom he married Sept. 14, 1926, and two sons, Howard and Gerald.

### NEW LITERATURE

**Lubricating Devices**—A new catalog covering its products has been issued by the "Swift" Lubricator Co., Elmira, N. Y. Included in it are illustrations and descriptions of air compressor and gas engine lubricators, sight feed lubricators, brass grease cups and oil cups, air and pet cocks, self cleaning water gauges, etc., etc.

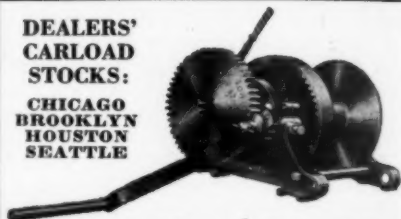
**Shovels, Draglines, Clamshells**—New illustrated catalogs revealing latest improved specifications of Byers shovels, draglines, clamshells and back hoes have been issued by The Byers Machine Co., Ravenna, O. Many new features are listed. For instance, the new  $\frac{3}{8}$ -yd. Bearcat Jr. is now offered with high lift shovel boom and stick. Power on Byers  $\frac{3}{4}$ -yd. Model 83 has been increased. New motors are offered on  $\frac{3}{8}$ -yd. Model 55,  $\frac{1}{2}$ -yd. Models 60 and 65 and on the  $\frac{5}{8}$ -yd. Model 75. Other changes and improvements also are included.

**Calcium Chloride Surface Consolidated Roads**—A new bulletin describing the methods, materials and equipment for the construction and maintenance of calcium chloride surface consolidated roads has been issued by Solvay Sales Corporation, 40 Rector St., New York, N. Y. This new booklet is largely based on engineering and field reports covering roads now in service. It gives the economics and advantages of surface consolidation—the non-technical, rule-of-thumb method of stabilizing low cost roads—and contains detailed, but non-technical, recommendations for both construction. It includes descriptions of roads suitable for surface consolidation . . . costs and savings . . . materials and equipment required . . . use of calcium chloride and why it is needed . . . crown and drainage.

**Rubber Mechanical Goods**—The B. F. Goodrich Co., Akron, O., has just published a new 24-page catalog on its mechanical goods. The volume is a threefold one, a condensed catalog, engineering data and guide to selection of various products.

### DEALERS' CARLOAD STOCKS:

CHICAGO  
BROOKLYN  
HOUSTON  
SEATTLE



|           |        |         |         |
|-----------|--------|---------|---------|
| Capacity: | 2-Ton  | 5-Ton   | 15-Ton  |
| Net Wt.:  | 60 lb. | 110 lb. | 690 lb. |
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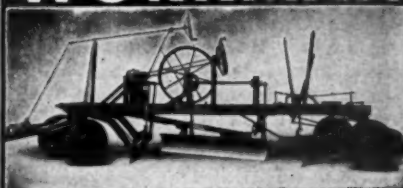
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